Access DB# 118280

SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Hussein Alhawarik Examiner #: 79576 Date: 3/30/04
Art Unit: 2621 Phone Number 30 6-4049 Serial Number: 09/786,823
Mail Box and Bldg/Room Location: PK1-4B18 Results Format Preferred (circle): ~~PAPER~~ DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

****

Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Watermarking of Digital Images using Wavelet and Discrete Cosine transforms

Inventors (please provide full names): see attachment

Earliest Priority Filing Date: 9/10/1998

**For Sequence Searches Only* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.*

Wavelet image

DCT or (discrete cosine transform) watermark

(watermarking or steganography)

-Claim 1 terminology

****

STAFF USE ONLY	Type of Search		Vendors and cost where applicable	
Searcher: Vamshi Malakanti	NA Sequence (#)		STN	
Searcher Phone #: 703 306 0254	AA Sequence (#)		Dialog	
Searcher Location: PK2 3C03	Structure (#)		Questel/Orbit	
Date Searcher Picked Up: 04/01/04	Bibliographic	/	Dr.Link	
Date Completed: 04/01/04	Litigation		Lexis/Nexis	
Searcher Prep & Review Time:	Fulltext	/	Sequence Systems	
Clerical Prep Time:	Patent Family		WWW/Internet	
Online Time:	Other		Other (specify)	

PTO-1590 (8-01)

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File 344:Chinese Patents Abs Aug 1985-2004/Mar
         (c) 2004 European Patent Office
File 347:JAPIO Nov 1976-2003/Nov(Updated 040308)
         (c) 2004 JPO & JAPIO
File 348:EUROPEAN PATENTS 1978-2004/Mar W03
         (c) 2004 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20040325,UT=20040318
         (c) 2004 WIPO/Univentio
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200419
         (c) 2004  Thomson Derwent

Set     Items   Description
S1      63331   AU=(CHOI, J? OR CHOI J? OR KIM, J? OR KIM J? OR CHO, J? OR
             CHO J? OR LEE, H? OR LEE H?) OR CO=MARKANY
S2     814785   DIGITAL OR DIGITI? OR BINARY
S3       1220   S1 AND (WATERMARK? OR WATER()MARK? OR MESSAGE? OR COPYRIGH-
             T(W)PROTECT? OR DIGITAL(3N)(FINGERPRINT? OR FINGER(W)PRINT?) -
             OR (ID OR IDS OR IDENTIFIER? ?)(5N)S2 OR STEGANOGRAPH? OR STE-
             GANO()GRAPH?)
S4         27   S3(S)(WAVELET? ? OR WAVE()LET? ? OR DCT OR DISCRETE()COSIN-
             E()TRANSFORM)
S5         27   IDPAT (sorted in duplicate/non-duplicate order)
S6         21   IDPAT (primary/non-duplicate records only)
S7         19   S6 AND AD=19980910:20020101/PR
S8          3   S6 AND AD=20020101:20040331/PR
S9          0   S6 NOT (S7 OR S8)
S10         1   S6 AND AD=19980910/PR
S11       112   S1 AND IC=G06K-009/00
S12         7   S11 AND S3
S13         7   IDPAT (sorted in duplicate/non-duplicate order)
S14         7   IDPAT (primary/non-duplicate records only)
S15         5   S14 AND AD=19980910:20020101/PR
S16         2   S14 AND AD=20020101:20040331/PR
S17         0   S14 NOT (S15 OR S16)
```

10/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

013156655 **Image available**
WPI Acc No: 2000-328527/200028
XRPX Acc No: N00-247308

Watermarking method for digital image using wavelet and discrete cosine transformations involves transforming digital image using wavelet transformation and watermark using discrete cosine transformation

Patent Assignee: CHO J S (CHOJ-I); CHOI J U (CHOI-I); KIM J W (KIMJ-I); LEE H H (LEEH-I); LEE S K (LEES-I); MARKANY INC (MARK-N); TRUSTECH JH (TRUS-N); CHOI J W (CHOI-I)
Inventor: CHO J S; CHOI J U; KIM J W; LEE H H; CHOI J W
Number of Countries: 089 Number of Patents: 010
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
WO 200016516	A1	20000323	WO 99US20649	A	19990910	200028	B
AU 9960311	A	20000403	AU 9960311	A	19990910	200034	
KR 99044818	A	19990625	KR 9837273	A	19980910	200036	
KR 99046183	A	19990705	KR 9837274	A	19980910	200037	
EP 1112636	A1	20010704	EP 99969197	A	19990910	200138	
			WO 99US20649	A	19990910		
KR 2001079788	A	20010822	KR 2001703138	A	20010310	200213	
KR 285077	B	20010315	KR 9837274	A	19980910	200216	
KR 289365	B	20010502	KR 9837273	A	19980910	200221	
CN 1325577	A	20011205	CN 99813122	A	19990910	200223	
JP 2003505895	W	20030212	WO 99US20649	A	19990910	200321	
			JP 2000570934	A	19990910		

Priority Applications (No Type Date): KR 9837274 A 19980910; KR 9837273 A 19980910
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200016516	A1	E	37	H04L-009/00	
Designated States (National): AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK DM EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW					
Designated States (Regional): AT BE CH CY DE DK EA ES FI FR GB GH GM GR IE IT KE LS LU MC MW NL OA PT SD SE SL SZ UG ZW					
AU 9960311	A				Based on patent WO 200016516
KR 99044818	A			H04N-007/30	
KR 99046183	A			H04N-007/24	
EP 1112636	A1	E		H04L-009/00	Based on patent WO 200016516
Designated States (Regional): AL AT BE CH CY DE DK ES FI FR GB GR IE IT LI LT LU LV MC MK NL PT RO SE SI					
KR 2001079788	A			H04N-007/24	
KR 285077	B			H04N-007/24	Previous Publ. patent KR 99046183
KR 289365	B			H04N-007/243	Previous Publ. patent KR 99044818
CN 1325577	A			H04L-009/00	
JP 2003505895	W		33	H04N-001/387	Based on patent WO 200016516

Watermarking method for digital image using wavelet and discrete cosine transformations involves transforming digital image using wavelet transformation and watermark using discrete cosine transformation

Abstract (Basic):

... The method involves transforming a digital image using a **wavelet** transformation, and a **watermark** using discrete cosine transformation. The discrete cosine transformed **watermark** is then integrated with the **wavelet** transformed digital image to generate a **watermark** embedded image.

... The figure shows the flowchart of **watermarking** method for digital image using **wavelet** and discrete cosine transformations...

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File 344:Chinese Patents Abs Aug 1985-2004/Mar
(c) 2004 European Patent Office
File 347:JAPIO Nov 1976-2003/Nov(Updated 040308)
(c) 2004 JPO & JAPIO
File 350:Derwent WPIX 1963-2004/UD,UM &UP=200419
(c) 2004 Thomson Derwent

Set	Items	Description
S1	212016	(IMAGE? ? OR PICTURE? ? OR PHOTO? ? OR GRAPHIC? OR PHOTOGRAPH?)(5N)(DIGITAL? OR BINARY? OR OPTICAL? OR ELECTRONIC? OR COMPUTER?) OR JPG OR JPGS OR JPEGS OR JPEG OR MPEG OR MPEGS OR GIF OR GIFS OR TIFF OR BMP
S2	2077	(WAVELET? ? OR WAVE()LET? ?)
S3	4386	DCT OR DISCRETE()COSINE()TRANSFORM
S4	548541	DIGITAL OR DIGITI? OR BINARY
S5	6354	WATERMARK? OR WATER()MARK? OR COPYRIGHT(W)PROTECT? OR DIGITAL(3N)(FINGERPRINT? OR FINGER(W)PRINT?) OR (ID OR IDS OR IDENTIFIER? ?)(5N)S4 OR STEGANOGRAPH? OR STEGANO()GRAPH?
S6	1	S1 AND S2 AND S3 AND S5
S7	36	S2 AND S3
S8	36	IDPAT (sorted in duplicate/non-duplicate order)
S9	35	IDPAT (primary/non-duplicate records only)
S10	20	S9 AND AD=19980910:20020101/PR
S11	6	S9 AND AD=20020101:20040331/PR
S12	11	S9 NOT (S10 OR S11 OR S6)
S13	5	S12 AND (S1 OR S5)
S14	6	S12 NOT S13

6/3,K/1 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

015207933 **Image available**
WPI Acc No: 2003-268469/200326
XRPX Acc No: N03-213305
Automated digital watermarking **method e.g. for** copyright protection **for digital products, involves calculating discrete transform having several frequency bands**
Patent Assignee: NAJARIAN K (NAJA-I); UNIV NORTH CAROLINA (UYNC-N)
Inventor: NAJARIAN K
Number of Countries: 101 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
WO 200319464	A1	20030306	WO 2002US28217	A	20020828	200326 B
US 20030095683	A1	20030522	US 2001315223	P	20010828	200336
			US 2002134255	A	20020429	

Priority Applications (No Type Date): US 2002134255 A 20020429; US 2001315223 P 20010828
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
WO 200319464	A1	E	28	G06K-009/00	

Designated States (National): AE AG AL AM AT AU AZ BA BB BG BR BY BZ CA CH CN CO CR CU CZ DE DK DM DZ EC EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MA MD MG MK MN MW MX MZ NO NZ OM PH PL PT RO RU SD SE SG SI SK SL TJ TM TN TR TT TZ UA UG US UZ VC VN YU ZA ZM ZW
Designated States (Regional): AT BE BG CH CY CZ DE DK EA EE ES FI FR GB GH GM GR IE IT KE LS LU MC MW MZ NL OA PT SD SE SK SL SZ TR TZ UG ZM ZW

US 20030095683	A1	G06K-009/00	Provisional application US 2001315223

Automated digital watermarking **method e.g. for** copyright protection **for digital products, involves calculating discrete transform having several frequency bands**

Abstract (Basic):
... The method involves calculating a discrete transform having several frequency bands. Several digital **watermarks** are inserted into the frequency bands. Each digital **watermark** has a predetermined weight. The discrete transform has a discrete transform selected from a group consisting of discrete **wavelet** , a **discrete cosine transform** , and discrete Fourier transform.
... An INDEPENDENT CLAIM is included for a computer readable medium, and an automated **watermarking** method...
...For **copyright protection** for digital products or digital **watermarking**
...

...Embeds a digital **watermark** in both low and high frequencies of **image** or other production, providing **digital watermark** which is resistant to variety of attacks...

...The figure shows a functional block diagram of an embodiment of an automated digital **watermarking** system of the invention
...Title Terms: **WATERMARK** ;
?

13/3,K/1 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO

06446701 **Image available**
IMAGE FORMING DEVICE AND ITS METHOD

PUB. NO.: 2000-032271 [JP 2000032271 A]
PUBLISHED: January 28, 2000 (20000128)
INVENTOR(s): FUKUHARA TAKAHIRO
KATO KEISUKE
MINAMI MASAFUMI
APPLICANT(s): SONY CORP
APPL. NO.: 10-196009 [JP 98196009]
FILED: July 10, 1998 (19980710)

ABSTRACT

... a storage medium 90 and decodes a map image 105 based thereon and gives the decoded image to an image composition section 3. Fractal transform, **wavelet** transform or **discrete cosine transform** or the like is adopted for the decoding system to configure a natural image or a complicated texture in navigation and the map image 105 is formed in a format such as a **BMP** form. A vector data decoding section 2 decodes an image 107 consisting of a line drawing of a road, a mark.symbol or the like ...

13/3,K/2 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

014126274 **Image available**
WPI Acc No: 2001-610484/200170
Related WPI Acc No: 2001-167528; 2001-423463
XRPX Acc No: N01-455673
Image data encoding and decoding method for multimedia communication applications, involves using discrete wavelet **transform which satisfies certain relations**
Patent Assignee: SAMSUNG ELECTRONICS CO LTD (SMSU)
Inventor: CHANEY J; JAHANGHIR M; KAUFMAN M A
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week
US 6275616	B1	20010814	US 9758697	P	19970912	200170 B
			US 972256	A	19971231	

Priority Applications (No Type Date): US 9758697 P 19970912; US 972256 A 19971231
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6275616	B1		18	G06K-009/32	Provisional application US 9758697

Image data encoding and decoding method for multimedia communication applications, involves using discrete wavelet **transform which satisfies certain relations**

Abstract (Basic):
... A discrete **wavelet** transform (DWT) which satisfies certain relations, is used for encoding and decoding the image data and facilitating a single step calculation of inverse DWT while...

... For multimedia **images** in **digital** communication...

...High quality lower definition image is provided which represents accurately the original image data by decoding **DCT** encoded image data using an IDWT. The image is decoded much faster and only less number of system resources are required...

13/3,K/3 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

013979014
WPI Acc No: 2001-463228/200150
XRPX Acc No: N01-343332
Video compression method and device - which can be used as pre-processor/post-processor of JPG image compression program to provide an even higher compression ratio
Patent Assignee: IND TECHNOLOGY RES INST (INTE-N)
Inventor: JUANG J; MA J
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
TW 393856	A	20000611	TW 94108362	A	19940907	200150	B

Priority Applications (No Type Date): TW 94108362 A 19940907
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
TW 393856	A			H04N-011/02	

... **which can be used as pre-processor/post-processor of JPG image compression program to provide an even higher compression ratio**
Abstract (Basic):
... image signal and a set of difference image signals, which can be separately used by users requesting different resolutions and video qualities By using a **wavelet** transformation technology, the input video is decomposed into a coarse image and at least one difference image group. The coarse image encoder uses the combined processing of **DCT** , vector quantifier VQ, and the entropy encoding. The **JPEG** encoding architecture or the like can replace this compression encoder processing. The difference image group encoder uses the combined encoding architecture of the scalar quantifier...

13/3,K/4 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

013683315 **Image available**
WPI Acc No: 2001-167528/200117
Related WPI Acc No: 2001-423463; 2001-610484
XRPX Acc No: N01-120725
Image **data processing method for** digital **communication, involves generating inverse discrete** wavelet **transform reduced image data by separately processing inverse** discrete cosine transform **processed image data**
Patent Assignee: SAMSUNG ELECTRONICS CO LTD (SMSU)
Inventor: CHANEY J; JAHANGHIR M; KAUFMAN M A
Number of Countries: 001 Number of Patents: 001
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
US 6141457	A	20001031	US 9758697	P	19970912	200117	B
			US 971880	A	19971231		

Priority Applications (No Type Date): US 9758697 P 19970912; US 971880 A 19971231
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
US 6141457	A		19	G06K-009/36	Provisional application US 9758697

Image **data processing method for** digital **communication, involves generating inverse discrete** wavelet **transform reduced image data by separately processing inverse** discrete cosine transform **processed image data**

Abstract (Basic):

... Inverse **DCT** (IDCT) processed image data is generated by processing image data (302) encoded using **DCT** by IDCT process in a decoder (308), which is separately processed with inverse discrete 1wavelet transform (IDWT) to generate IDWT reduced image data. Reduced image data with relatively higher and lower definitions than IDWT reduced data and image data is...

... The image data is encoded in an encoder (304) using **DCT** process (306). The IDCT processed image data (316) has the same definition as image data and IDWT reduced image data has a relatively lower definition...

...For **digital** communications for processing high definition **image** to provide relatively lower definition image using discrete cosine and **wavelet** transforms...

... **DCT** process (306

13/3,K/5 (Item 4 from file: 350)
DIALOG(R)File 350:Derwent WPIX
(c) 2004 Thomson Derwent. All rts. reserv.

012532041 **Image available**
WPI Acc No: 1999-338147/199929
XRPX Acc No: N99-253475
Digital image **compression method**
Patent Assignee: CANON KK (CANO); CANON INFORMATION SYSTEMS RES AUSTRALIA (CANO)
Inventor: ANDREW J P; BRADLEY A P
Number of Countries: 001 Number of Patents: 002
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
AU 9887096	A	19990415	AU 9887096	A	19980928	199929	B
AU 725719	B	20001019	AU 9887096	A	19980928	200057	

Priority Applications (No Type Date): AU 979515 A 19970929
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
AU 9887096	A		48	H03M-007/30	
AU 725719	B			H03M-007/30	Previous Publ. patent AU 9887096

Digital image **compression method**
Abstract (Basic):

... Image data is transformed, using a discrete **wavelet** transform, into a series of low and high frequency component sub-bands. These have

a corresponding series of coefficients which are arranged spatially in a...

... For compressing **digital** data, e.g. video and **image** data...

...Performs well with data having sharp discontinuities in preference to lossy heavy quantization techniques using **discrete cosine transform** , e.g. **JPEG** .

?

14/3,K/1 (Item 1 from file: 347)
DIALOG(R)File 347:JAPIO
(c) 2004 JPO & JAPIO. All rts. reserv.

06146643 **Image available**
WAVELET CONVERTER, ITS METHOD, **WAVELET** INVERSE CONVERTER, ITS METHOD, IMAGE CODER, ITS METHOD, IMAGE DECODER AND ITS METHOD

PUB. NO.: 11-088183 [JP 11088183 A]
PUBLISHED: March 30, 1999 (19990330)
INVENTOR(s): ISOMURA MASAICHI
APPLICANT(s): SEIKO EPSON CORP
APPL. NO.: 09-247294 [JP 97247294]
FILED: September 11, 1997 (19970911)

WAVELET CONVERTER, ITS METHOD, **WAVELET** INVERSE CONVERTER, ITS METHOD, IMAGE CODER, ITS METHOD, IMAGE DECODER AND ITS METHOD

ABSTRACT

... To reduce a work memory considerably or to eliminate the memory and to maintain the image quality to a level attained by provision of a **discrete cosine transform DCT** .

SOLUTION: The **wavelet** converter or the like is provided with a low frequency component extract means 12 that extracts a low frequency component from an input signal and...

14/3,K/2 (Item 2 from file: 347)
DIALOG(R)File 347:JAPIO
(c) 2004 JPO & JAPIO. All rts. reserv.

06018952 **Image available**
IMAGE PROCESSING SYSTEM

PUB. NO.: 10-302052 [JP 10302052 A]
PUBLISHED: November 13, 1998 (19981113)
INVENTOR(s): ONEDA SHOGO
APPLICANT(s): RICOH CO LTD [000674] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 09-120298 [JP 97120298]
FILED: April 23, 1997 (19970423)

ABSTRACT

...SOLUTION: Inputted color image data are **wavelet** transformed in a **wavelet** transformation part 1 for respective color components. After the respective processings corresponding to the transformation in a filter, color matching and .gamma. correction part 2, a **wavelet** transformed **wavelet** coefficient is inversely transformed in a **wavelet** inverse transformation part 3 and outputted. Also, though the similar processing is possible even when the **wavelet** transformation is replaced with other orthogonal transformation (**DCT** or the like), the wavelet transformation is realized by an arithmetic operation and the side effects of block distortion/mosquito noise, etc., are hardly generated. Thus, the computation amount of...

14/3,K/3 (Item 3 from file: 347)
DIALOG(R)File 347:JAPIO

05646840 **Image available**
IMAGE CODER

PUB. NO.: 09-261640 [JP 9261640 A]
PUBLISHED: October 03, 1997 (19971003)
INVENTOR(s): GO YUKIO
APPLICANT(s): OKI ELECTRIC IND CO LTD [000029] (A Japanese Company or Corporation), JP (Japan)
APPL. NO.: 08-066047 [JP 9666047]
FILED: March 22, 1996 (19960322)

ABSTRACT

...SOLUTION: A received image signal s10 is given to a discrete cosine transformation(**DCT**) means 21 and a **wavelet** transformation (WLT) means 11 and outputted to a code quantity comparison means 15 via 1st and 2nd scanning means 22, 12 connecting respectively to the **DCT** means 21 and the WLT means 11, 1st and 2nd quantization means 23, 13, and 1st and 2nd coding means 24, 14. The code quantity...

14/3,K/4 (Item 1 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011482255 **Image available**
WPI Acc No: 1997-460160/199743
XRPX Acc No: N97-383151
Switched filterbank encoding method for audio signals - involving monitoring stationarity of input signal and switching between wavelet **filtering and modified discrete cosine transforms**
Patent Assignee: LUCENT TECHNOLOGIES INC (LUCE)
Inventor: JOHNSTON J D; SINHA D
Number of Countries: 008 Number of Patents: 007
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 797313	A2	19970924	EP 97301655	A	19970312	199743	B
CA 2199070	A	19970919	CA 2199070	A	19970304	199815	
JP 10039897	A	19980213	JP 9765783	A	19970319	199817	
KR 97067255	A	19971013	KR 9710242	A	19970319	199843	
US 5852806	A	19981222	US 9614725	P	19960319	199907	
			US 96720757	A	19961001		
CA 2199070	C	20010515	CA 2199070	A	19970304	200131	
JP 3418305	B2	20030623	JP 9765783	A	19970319	200341	

Priority Applications (No Type Date): US 96720757 A 19961001; US 9614725 P 19960319
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 797313	A2	E	12	H04B-001/66	
Designated States (Regional): DE FR GB IT					
CA 2199070	A			H03M-007/30	
JP 10039897	A		12	G10L-007/04	
KR 97067255	A			G11B-020/10	
US 5852806	A			G10L-009/00	Provisional application US 9614725
CA 2199070	C	E		G10L-003/02	
JP 3418305	B2		11	G10L-019/02	Previous Publ. patent JP 10039897

... **involving monitoring stationarity of input signal** and switching **between** wavelet **filtering and modified discrete cosine transforms**

...Abstract (Basic): entropy encoded (214) in a conventional manner. The signal is coded using two separate filter banks. One filter bank uses a high frequency resolution modified **discrete cosine transform** (204) (MDCT), while the other uses a **wavelet** filterbank...

...conventional manner. Only long windows are used by this filterbank, with no switching to the short windows. The non-stationary signals are coded using the **wavelet** filterbank...

14/3,K/5 (Item 2 from file: 350)
DIALOG(R)File 350:Derwent WPIX

011251716 **Image available**
WPI Acc No: 1997-229619/199721
Related WPI Acc No: 2000-248621
XRPX Acc No: N97-189824

Video data compression apparatus - has filter for frequency separating detected image activity values, using smoothed image activity values to control quantisation levels applied to frequency separated data

Patent Assignee: SONY UK LTD (SONY); SONY CORP (SONY)
Inventor: GILLARD C H; STONE J J
Number of Countries: 003 Number of Patents: 005
Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
GB 2306832	A	19970507	GB 9522171	A	19951030	199721	B
JP 9163371	A	19970620	JP 96273623	A	19961016	199735	
GB 2306832	B	20000329	GB 9522171	A	19951030	200019	
US 6614941	B1	20030902	US 96721623	A	19960926	200359	
JP 3493103	B2	20040203	JP 96273623	A	19961016	200410	

Priority Applications (No Type Date): GB 9522171 A 19951030
Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
GB 2306832	A		21	H04N-007/50	
JP 9163371	A		10	H04N-007/30	
GB 2306832	B			H04N-007/50	
US 6614941	B1			G06K-009/36	
JP 3493103	B2		10	H04N-007/30	Previous Publ. patent JP 9163371

...Abstract (Basic): The video compression apparatus segments images into blocks and applies transforms and quantisation for video compression. The system can use **DCT** , sub-band or **wavelet** transformations to apply frequency transformations. The input video (50) is applied to the transform system (70) that generates the transformed data into a frame store...

...USE/ADVANTAGE - Esp. for video compression using **wavelet** based transform method. Avoids artifacts in decompressed images resulting from quantisation effects between adjacent blocks...

14/3,K/6 (Item 3 from file: 350)
DIALOG(R)File 350:Derwent WPIX

009603314
WPI Acc No: 1993-296862/199338

XRPX Acc No: N93-228818

Image Processing appts. for picture data encoding and compression - applies discrete cosine transformation to picture data blocks not containing edges but wavelet **e.g. Haar transformation to blocks with edges**

Patent Assignee: SONY CORP (SONY)

Inventor: SAKAMOTO T

Number of Countries: 005 Number of Patents: 006

Patent Family:

Patent No	Kind	Date	Applicat No	Kind	Date	Week	
EP 561593	A2	19930922	EP 93301949	A	19930315	199338	B
JP 6046404	A	19940218	JP 9370803	A	19930305	199412	
US 5398067	A	19950314	US 9331966	A	19930316	199516	
EP 561593	A3	19940810	EP 93301949	A	19930315	199530	
EP 561593	B1	19970716	EP 93301949	A	19930315	199733	
DE 69312132	E	19970821	DE 612132	A	19930315	199739	
			EP 93301949	A	19930315		

Priority Applications (No Type Date): JP 9292077 A 19920317

Patent Details:

Patent No	Kind	Lan	Pg	Main IPC	Filing Notes
EP 561593	A2	E	15		
Designated States (Regional): DE FR GB					
US 5398067	A		14		
EP 561593	B1	E	16		
Designated States (Regional): DE FR GB					
DE 69312132	E				Based on patent EP 561593

... **applies discrete cosine transformation to picture data blocks not containing edges but** wavelet **e.g. Haar transformation to blocks with edges**

...Abstract (Basic): to a video conferencing system, the presence or absence of an edge within a picture data block is detected. In the absence of any edges, **discrete cosine transform** coding is applied to that block for coding before transmission. When an edge is found to exist within a data block, the **wavelet** e.g. Haar transformation is applied instead...

...Abstract (Equivalent): A picture data processing apparatus which transmits inputted picture data after encoding said data block by block, comprising: transforming means (8) comprising **discrete cosine transform** means (14) for discrete cosine transforming said picture data, characterised by edge detection means (8, 10) for detecting presence or absence of an edge in said each block; and in that the transforming means (8) further comprises **Wavelet** transform means (16) for **Wavelet** transforming said picture data, and in that the transforming means (8) is responsive to the edge detection means (8, 10) to transform the picture data for said each block by the **discrete cosine transform** means (14) when there is no edge and by the **Wavelet** transform means (16) when there is an edge...

...Abstract (Equivalent): A **wavelet** transformer **wavelet** transforms each one of the blocks of the picture data, when the presence of an edge is detected by the edge detector. The **wavelet** transformer is comprised of a Haar transformer to Haar transform each one of the blocks of the picture data...

?

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File   2:INSPEC 1969-2004/Mar W3
         (c) 2004 Institution of Electrical Engineers
File   6:NTIS 1964-2004/Mar W4
         (c) 2004 NTIS, Intl Cpyrght All Rights Res
File   8:Ei Compendex(R) 1970-2004/Mar W3
         (c) 2004 Elsevier Eng.  Info. Inc.
File  34:SciSearch(R) Cited Ref Sci 1990-2004/Mar W3
         (c) 2004 Inst for Sci Info
File  35:Dissertation Abs Online 1861-2004/Feb
         (c) 2004 ProQuest Info&Learning
File  65:Inside Conferences 1993-2004/Mar W4
         (c) 2004 BLDSC all rts. reserv.
File  94:JICST-EPlus 1985-2004/Mar W2
         (c)2004 Japan Science and Tech Corp(JST)
File  95:TEME-Technology & Management 1989-2004/Mar W2
         (c) 2004 FIZ TECHNIK
File  99:Wilson Appl. Sci & Tech Abs 1983-2004/Feb
         (c) 2004 The HW Wilson Co.
File 144:Pascal 1973-2004/Mar W3
         (c) 2004 INIST/CNRS
File 233:Internet & Personal Comp. Abs. 1981-2003/Sep
         (c) 2003 EBSCO Pub.
File 239:Mathsci 1940-2004/May
         (c) 2004 American Mathematical Society
File 434:SciSearch(R) Cited Ref Sci 1974-1989/Dec
         (c) 1998 Inst for Sci Info
File 583:Gale Group Globalbase(TM) 1986-2002/Dec 13
         (c) 2002 The Gale Group
File 603:Newspaper Abstracts 1984-1988
         (c)2001 ProQuest Info&Learning
File 483:Newspaper Abs Daily 1986-2004/Mar 31
         (c) 2004 ProQuest Info&Learning
File 248:PIRA 1975-2004/Mar W3
         (c) 2004 Pira International

Set     Items   Description
S1     576486   (IMAGE? ? OR PICTURE? ? OR PHOTO? ? OR GRAPHIC? OR PHOTOGR-
             APH?)(5N)(DIGITAL? OR  BINARY? OR OPTICAL? OR ELECTRONIC? OR -
             COMPUTER?) OR JPG OR JPGS OR JPEGS OR JPEG OR MPEG OR MPEGS OR
              GIF OR GIFS OR TIFF OR BMP
S2      91502   (WAVELET? ? OR WAVE()LET? ?)
S3      19200   DCT OR DISCRETE()COSINE()TRANSFORM
S4    1839989   DIGITAL OR DIGITI? OR BINARY
S5      17372   WATERMARK? OR WATER()MARK?  OR COPYRIGHT(W)PROTECT? OR DIG-
             ITAL(3N)(FINGERPRINT? OR FINGER(W)PRINT?) OR (ID OR IDS OR ID-
             ENTIFIER? ?)(5N)S4 OR STEGANOGRAPH? OR STEGANO()GRAPH?
S6         74   S1 AND S2 AND S3 AND S5
S7         48   RD S6 (unique items)
S8         10   S7 NOT PY>1998
S9        142   S2 AND S3 AND S5
S10        81   RD S9 (unique items)
S11        11   S10 NOT PY>1998
S12         1   S11 NOT S8
S13    137840   AU=(CHOI, J? OR CHOI J? OR KIM, J? OR KIM J? OR CHO, J? OR
              CHO J? OR LEE, H? OR LEE H?) OR CO=MARKANY
S14         5   S13 AND S1 AND S2 AND S3
S15         4   RD S14 (unique items)
S16         3   S15 NOT PY>1998
```

8/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

6195152 INSPEC Abstract Number: B1999-04-6135C-152, C1999-04-5260B-256
Title: The effect of matching watermark **and compression transforms in compressed color images**
Author(s): Wolfgang, R.B.; Podilchuk, C.I.; Delp, E.J.
Author Affiliation: Sch. of Electr. Eng., Purdue Univ., West Lafayette, IN, USA
Conference Title: Proceedings 1998 International Conference on Image Processing. ICIP98 (Cat. No.98CB36269) Part vol.1 p.440-4 vol.1
Publisher: IEEE Comput. Soc, Los Alamitos, CA, USA
Publication Date: 1998 Country of Publication: USA 3 vol. (lxxi+962+984+1013) pp.
ISBN: 0 8186 8821 1 Material Identity Number: XX-1998-01745
U.S. Copyright Clearance Center Code: 0 8186 8821 1/98/$10.00
Conference Title: Proceedings of IPCIP'98 International Conference on Image Processing
Conference Sponsor: IEEE Signal Process. Soc
Conference Date: 4-7 Oct. 1998 Conference Location: Chicago, IL, USA
Language: English
Subfile: B C

Title: The effect of matching watermark **and compression transforms in compressed color images**
Abstract: The growth of networked multimedia systems has complicated copyright enforcement relative to **digital images** . One way to protect the copyright of **digital images** is to add an invisible structure to the **image** (known as a **digital watermark**) to identify the owner. In particular, it is important for Internet and image database applications that as much of the **watermark** as possible remain in the image after compression. Image adaptive **watermarks** are particularly resistant to removal by signal processing attack such as filtering or compression. Common image adaptive **watermarks** operate in the transform domain (**DCT** or **wavelet**); the same domains are also used for popular image compression techniques (**JPEG** , EZW). This paper investigates whether matching the **watermarking** domain to the compression transform domain will make the **watermark** more robust to compression.
...Descriptors: **wavelet** transforms
...Identifiers: **digital images** ; **copyright protection** ; ...

...digital **watermark** ; ...

...image adaptive **watermarks** ; ...
... **DCT** ; **wavelet** ; ...

... **JPEG** ; ...

...color embedded zero-tree **wavelet**

8/3,K/2 (Item 2 from file: 2)
DIALOG(R)File 2:INSPEC

5914465 INSPEC Abstract Number: B9806-6140C-489, C9806-1250-237
Title: Image-adaptive watermarking **using visual models**
Author(s): Podilchuk, C.I.; Wenjun Zeng

Author Affiliation: Lucent Technol., Bell Labs., Murray Hill, NJ, USA
Journal: IEEE Journal on Selected Areas in Communications vol.16, no.4 p.525-39
Publisher: IEEE,
Publication Date: May 1998 Country of Publication: USA
CODEN: ISACEM ISSN: 0733-8716
SICI: 0733-8716(199805)16:4L.525:IAWU;1-C
Material Identity Number: D958-98004
U.S. Copyright Clearance Center Code: 0733-8716/98/$10.00
Language: English
Subfile: B C
Copyright 1998, IEE

Title: Image-adaptive watermarking **using visual models**
...Abstract: faced with the challenge of how to protect their electronic data. This problem has generated a flurry of research activity in the area of digital **watermarking** of electronic content for **copyright protection** . The challenge here is to introduce a digital **watermark** that does not alter the perceived quality of the electronic content, while being extremely robust to attack. For instance, in the case of image data, editing the picture or illegal tampering should not destroy or transform the **watermark** into another valid signature. Equally important, the **watermark** should not alter the perceived visual quality of the image. From a signal processing perspective, the two basic requirements for an effective **watermarking** scheme, robustness and transparency, conflict with each other. We propose two **watermarking** techniques for **digital images** that are based on utilizing visual models which have been developed in the context of image compression. Specifically, we propose **watermarking** schemes where visual models are used to determine image dependent upper bounds on **watermark** insertion. This allows us to provide the maximum strength transparent **watermark** which, in turn, is extremely robust to common image processing and editing such as **JPEG** compression, rescaling, and cropping. We propose perceptually based **watermarking** schemes in two frameworks: the block-based **discrete cosine transform** and multiresolution **wavelet** framework and discuss the merits of each one. Our schemes are shown to provide very good results both in terms of image transparency and robustness.
...Descriptors: **wavelet** transforms
Identifiers: image-adaptive **watermarking** ; ...
...digital **watermarking** ; **copyright protection** ; ...

... **watermark** insertion...

...transparent **watermark** ; ...

... **JPEG** compression...

...block-based **discrete cosine transform** ; ...

...multiresolution **wavelet** ;

8/3,K/3 (Item 3 from file: 2)
DIALOG(R)File 2:INSPEC

5888949 INSPEC Abstract Number: B9805-6140C-632, C9805-1250-308
Title: A multiresolution watermark **for** digital images
Author(s): Xiang-Gen Xia; Boncelet, C.G.; Arce, G.R.
Author Affiliation: Dept. of Electr. Eng., Delaware Univ., Newark, DE,

USA
Conference Title: Proceedings. International Conference on Image Processing (Cat. No.97CB36144) Part vol.1 p.548-51 vol.1
Publisher: IEEE Comput. Soc, Los Alamitos, CA, USA
Publication Date: 1997 Country of Publication: USA 3 vol. (lii+951+892+748) pp.
ISBN: 0 8186 8183 7 Material Identity Number: XX97-00465
U.S. Copyright Clearance Center Code: 0 8186 8183 7/97/$10.00
Conference Title: Proceedings of International Conference on Image Processing
Conference Sponsor: IEEE Signal Process. Soc
Conference Date: 26-29 Oct. 1997 Conference Location: Santa Barbara, CA, USA
Language: English
Subfile: B C

Title: A multiresolution watermark **for** digital images
Abstract: We introduce a new multiresolution **watermarking** method for **digital images** . The method is based on the discrete **wavelet** transform (DWT). Pseudo-random codes are added to the large coefficients at the high and middle frequency bands of the DWT of an image. It is shown that this method is more robust to often proposed methods to some common image distortions, such as the **wavelet** transform based image compression, and image halftoning. Moreover, the method is hierarchical. The computation load needed to detect the **watermark** depends on the noise level in an image.
...Descriptors: **wavelet** transforms
Identifiers: **digital images** ; ...

...discrete **wavelet** transform...

...multiresolution **watermarking** method...

... **wavelet** transform based image compression...

... **copyright protection** ; ...

... **DCT** approach

8/3,K/4 (Item 1 from file: 6)
DIALOG(R)File 6:NTIS

1973523 NTIS Accession Number: DE96012173
Data embedding method
Sandford, M. T. ; Bradley, J. N. ; Handel, T. G.
Los Alamos National Lab., NM.
Corp. Source Codes: 072735000; 9512470
Sponsor: Department of Energy, Washington, DC.
Report No.: LA-UR-96-1770
1996 35p
Languages: English
Journal Announcement: GRAI9623; ERA9645
Sponsored by Department of Energy, Washington, DC.
Order this product from NTIS by: phone at 1-800-553-NTIS (U.S. customers); (703)605-6000 (other countries); fax at (703)321-8547; and email at orders@ntis.fedworld.gov. NTIS is located at 5285 Port Royal Road, Springfield, VA, 22161, USA.
NTIS Prices: PC A04/MF A01

Data embedding is a new **steganographic** method for combining digital information sets. This paper describes the data embedding method and gives examples of its application using software written in the C...
... data embedding in an application for digital imagery. Information is embedded into, and extracted from, Truecolor or color-pallet images in Microsoft(reg sign) bitmap (. **BMP**) format. Hiding data in the noise component of a host, by means of an algorithm that modifies or replaces the noise bits, is termed (open quote) **steganography** .(close quote) Data embedding differs markedly from conventional **steganography** , because it uses the noise component of the host to insert information with few or no modifications to the host data values or their statistical...

... The data embedding method applies to host data compressed with transform, or (open quote)lossy(close quote) compression algorithms, as for example ones based on **discrete cosine transform** and **wavelet** functions. Analysis of the host noise generates a key required for embedding and extracting the auxiliary data from the combined data. The key is stored...
Descriptors: **Image** processing; * **Digital** data; *Embedded systems; *Cryptography; Algorithms; Remote sensing; Noise; Security; Signatures

8/3,K/5 (Item 1 from file: 94)
DIALOG(R)File 94:JICST-EPlus

04855533 JICST ACCESSION NUMBER: 98A0338430 FILE SEGMENT: JICST-E
Digital Watermarking **Technologies and the Application to Contents Protection.**
Denshi Joho Tsushin Gakkai Taikai Koen Ronbunshu(Proceedings of the IEICE General Conference (Institute of Electronics, Information and Communication Engineers), 1998, VOL.1998,sogo 6, PAGE.430-431, FIG.4, REF.7
JOURNAL NUMBER: G0508AEP
UNIVERSAL DECIMAL CLASSIFICATION: 681.3:621.397.3 681.3.02-759
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Conference Proceeding
ARTICLE TYPE: Commentary
MEDIA TYPE: Printed Publication

Digital Watermarking **Technologies and the Application to Contents Protection.**
DESCRIPTORS: **digital image** ; ...

... **DCT** (transform...

... **wavelet** transform

8/3,K/6 (Item 2 from file: 94)
DIALOG(R)File 94:JICST-EPlus

03901394 JICST ACCESSION NUMBER: 99A0098034 FILE SEGMENT: JICST-E
Improvement of Digital Watermarking **under Frequency Domain For Enhancement of Resistance to Geometric Transformation Attacks.**
TANAKA HIROYUKI (1); NAKAJIMA MASAOMI (1)
(1) Nttdeta
Joho Shori Gakkai Kenkyu Hokoku, 1998, VOL.98,NO.108(CSEC-3), PAGE.37-42,

FIG.5, TBL.2, REF.3
JOURNAL NUMBER: Z0031BAO ISSN NO: 0919-6072
UNIVERSAL DECIMAL CLASSIFICATION: 621.391
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication

Improvement of Digital Watermarking **under Frequency Domain For Enhancement of Resistance to Geometric Transformation Attacks.**

ABSTRACT: **Digital watermarks** embedded to **digital images** are often invalidated by geometric transformation attacks as scaling and clipping. Digital **watermarks** that use methods of frequency analysis as **DCT** ,FFT, and **wavelet** transformation tend to preserve quality of **images** after embedding **digital watermarks** , but usually can be invalidated by geometric transformation attacks. Other type of digital **watermarks** that is embedded by changing sampled value as brightness of pixel for the value which contains information of digital **watermark** tends to cause quality of images to be worse but usually has resistance to geometric transformation attacks. We propose a digital **watermarking** method that is improved for enhancement of resistance to geometric transformation attacks and can preserve quality of **image** after embedding **digital watermark** by combination of digital **watermarking** method using **DCT** and another method which changes sampled value as brightness of pixel. (author abst.)

8/3,K/7 (Item 3 from file: 94)

03713330 JICST ACCESSION NUMBER: 98A0648682 FILE SEGMENT: JICST-E
Digital watermarking **and problems. Last resort for** copyright protection **!?**
YAMANAKA KIYOSHI (1)
(1) Nippon Telegr. and Teleph. Corp.
Gazo Rabo, 1998, VOL.9,NO.7, PAGE.5-8, FIG.4, REF.8
JOURNAL NUMBER: L2340AAI ISSN NO: 0915-6755
UNIVERSAL DECIMAL CLASSIFICATION: 681.3.02-759 681.3:347.77
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Commentary
MEDIA TYPE: Printed Publication

Digital watermarking **and problems. Last resort for** copyright protection **!?**
DESCRIPTORS: **digital image** ; ...

... **DCT** (transform...

... **wavelet** transform

8/3,K/8 (Item 4 from file: 94)

03523311 JICST ACCESSION NUMBER: 98A0090310 FILE SEGMENT: JICST-E
A Security of a Watermarking **for** Copyright Protection **Using** Wavelet **Transform.**

SAKAI YASUYUKI (1); ISHIZUKA HIROKAZU (1); SAKURAI KOICHI (2)
(1) Mitsubishi Electric Corp.; (2) Kyushu Univ., Grad. Sch.
Joho Shori Gakkai Ronbunshi(Transactions of Information Processing Society of Japan), 1997, VOL.38,NO.12, PAGE.2640-2647, FIG.10, TBL.2, REF.12
JOURNAL NUMBER: Z0778AAZ ISSN NO: 0387-5806
UNIVERSAL DECIMAL CLASSIFICATION: 681.3.02-759 681.3:621.397.3
LANGUAGE: Japanese COUNTRY OF PUBLICATION: Japan
DOCUMENT TYPE: Journal
ARTICLE TYPE: Original paper
MEDIA TYPE: Printed Publication

A Security of a Watermarking **for** Copyright Protection **Using** Wavelet **Transform.**

ABSTRACT: Conventional **watermarking** using **wavelet** transform utilizes the frequency information which is given from once and for all acting orthogonal Haar **wavelet** filter to original image. But it may be very week against alteration attack of malicious user, because they could be easy to eliminate hiding information using low-pass filter. Therefore, we propose a new **watermarking** system based on our experiments. The system has following two features. The first is actively utilizing substancial characterisity of Multi Resolutional Representation with **wavelet** transform. The second is including an idea managing somehow to enbed **watermarking** to lower frequency field. As a result of some experiments, we confirmed these effects. (author abst.)

...DESCRIPTORS: **digital image** ; ...

... **wavelet** transform...

... **DCT** (transform)

8/3,K/9 (Item 1 from file: 144)
DIALOG(R)File 144:Pascal

14512924 PASCAL No.: 00-0176705
Robust image watermarking **in the subband or** discrete cosine transform **domain**
Signal processing IX : theories and applications : Rhodes, 8-11 September 1998
TZOVARAS D; KARAGIANNIS N; STRINTZIS M G
THEODORIDIS S, ed; PITAS I, ed; STOURAITIS A, ed; KALOUPTSIDIS N, ed
Information Processing Laboratory, Electrical and Computer Engineering Department, Aristotle University of Thessaloniki, Thessaloniki 540 06, Greece
University of Athens, Greece.; Computer Technology Institute, Patras, Greece.; European Association for Signal Processing, Lausanne, Switzerland.
Eusipco : European signal processing conference, 9 (Rhodes GRC) 1998-09-08
1998 2285-2288
Publisher: Typorama, Patras
Language: English

Robust image watermarking **in the subband or** discrete cosine transform **domain**

In this paper a method is presented for **copyright protection** in **digital images** . **Copyright protection** is achieved by embedding an invisible signal, known as digital signature or **watermark** , in the

digital image . The method proposed in this paper casts the signature in the frequency domain by slightly modifying the values of randomly selected DC coefficients of the **Discrete Cosine Transform** (**DCT**) of the image. The same method is applied also on the Subband or **Wavelet** Transform coefficients. An adaptive method is proposed also based on perceptual criteria that guarantees the invisibility of the **watermark** and avoids the deterioration of the image. Signature detection is done via hypothesis testing, without to use any information from the original image. The **watermarks** embedded by the proposed method are very resistant to **JPEG** and other frequently used compression. Experimental results using real image data verify the effectiveness of the method.

English Descriptors: Image processing; Cryptography; Subband decomposition; Cosine transform; Discrete transformation; **Digital image** ; Adaptive method; Experimental result; **Digital** signature

French Descriptors: Traitement image; Cryptographie; Decomposition sous bande; Transformation cosinus; Transformation discrete; Image numerique; Methode adaptative; Resultat experimental; **Watermarking** ; Signature numerique

8/3,K/10 (Item 2 from file: 144)
DIALOG(R)File 144:Pascal

13205970 PASCAL No.: 97-0471213
Digital image watermarking **using visual models**
Human vision and electronic imaging II : San Jose CA, 10-13 February 1997 24-25 April 1997
PODILCHUK C I; ZENG W
ROGOWITZ Bernice E, ed; PAPPAS Thraasyvoulos N, ed
Bell Laboratories, 600 Mountain Ave. 2D-334, Murray Hill, NJ 07974, United States; EE Dept., Princeton University, Princeton, NJ, United States
Human vision and electronic imaging. Conference, 2 (San Jose CA USA) 1997-02-10
Journal: SPIE proceedings series, 1997, 3016 100-111
Language: English

Digital image watermarking **using visual models**
... with the challenge of how to protect their electronic data. This problem has generated a flurry of recent research activity in the area of digital **watermarking** of electronic content for **copyright protection** . Unlike the traditional visible **watermark** found on paper, the challenge here is to introduce a digital **watermark** that does not alter the perceived quality of the electronic content while being extremely robust to attack. For instance, in the case of image data, editing the picture or illegal tampering should not destroy or alter the **watermark** . Equally important, the **watermark** should not alter the perceived visual quality of the image. From a signal processing viewpoint, the two basic requirements for an effective **watermarking** scheme, robustness and transparency, conflict with each other. We propose a **watermarking** technique for **digital images** that is based on utilizing visual models which have been developed in the context of image compression. Specifically, we propose a **watermarking** scheme where visual models are used to determine image dependent modulation masks for **watermark** insertion. In other words, for each image we can determine the maximum amount of **watermark** signal that each portion of the image can tolerate without affecting the visual quality

of the image. This allows us to provide the maximum strength **watermark** which in turn, is extremely robust to common image processing and editing such as **JPEG** compression, rescaling, and cropping. We have **watermarking** results in a **DCT** framework as well as a **wavelet** framework. The **DCT** framework allows the direct insertion of **watermarks** to **JPEG** -compressed data whereas the **wavelet** based scheme provides a framework where we can take advantage of both a local and global approach. Our scheme is shown to provide dramatic improvement...

English Descriptors: **Digital image** ; Internet; Telecommunication; International network; Remote data processing; Information protection; Electronic data interchange; Copyright; Robustness; Technique; Visual information; Image processing; Models

?

12/3,K/1 (Item 1 from file: 2)
DIALOG(R)File 2:INSPEC

6313708 INSPEC Abstract Number: B1999-09-6135C-089, C1999-09-5260B-221
Title: Image protection via watermarking **on perceptually significant** wavelet **coefficients**
Author(s): Houng-Jyh Wang; Kuo, C.-C.J.
Author Affiliation: Integrated Media Syst. Center, Southern California Univ., Los Angeles, CA, USA
Conference Title: 1998 IEEE Second Workshop on Multimedia Signal Processing (Cat. No.98EX175) p.279-84
Editor(s): Wong, P.W.; Alwan, A.; Ortega, A.; Kuo, C.-C.J.; Nikian, C.L.M.
Publisher: IEEE, Piscataway, NJ, USA
Publication Date: 1998 Country of Publication: USA xvii+638 pp.
ISBN: 0 7803 4919 9 Material Identity Number: XX-1998-03663
U.S. Copyright Clearance Center Code: 0 7803 4919 9/98/$10.00
Conference Title: 1998 IEEE Second Workshop on Multimedia Signal Processing
Conference Date: 7-9 Dec. 1998 Conference Location: Redondo Beach, CA, USA
Language: English
Subfile: B C

Title: Image protection via watermarking **on perceptually significant** wavelet **coefficients**
Abstract: A new scheme to search perceptually significant **wavelet** coefficients for effective digital **watermark** casting is proposed in this research. Unlike other **watermark** casting algorithms, which select a fixed set of **DCT** or **wavelet** coefficients in the frequency domain, we use an adaptive method to find significant subbands and a number of coefficients in these subbands. The resulting method is image dependent. Furthermore, the threshold of the selected subband is used as one of the energy weighting factors in the generation of a broadband **watermark** so that it cannot be easily damaged by frequency-selective filtering, **DCT** or **wavelet** based compression attack.
...Descriptors: **wavelet** transforms
...Identifiers: perceptually significant **wavelet** coefficients...

...digital **watermark** casting...

...broadband **watermark**
?

16/3,K/1 (Item 1 from file: 8)
DIALOG(R)File 8:Ei Compendex(R)

04629652 E.I. No: EIP97023529288
Title: **Image coding using overlapped** wavelet **transform with permutation scan**
Author: Hur, Tae Won; **Kim, Jeong Woo** ; Kim, Eung Sung; **Choi, Joong Han** ; Lee, Keun Young
Corporate Source: Sung Kyun Kwan Univ, Kyungg-Do, S Korea
Conference Title: Proceedings of the 1996 IEEE Asia Pacific Conference on Circuits and Systems
Conference Location: Seoul, South Korea Conference Date: 19961118-19961121
E.I. Conference No.: 46079
Source: IEEE Asia-Pacific Conference on Circuits and Systems - Proceedings 1996. IEEE, Piscataway, NJ, USA. p 14-17
Publication Year: 1996
CODEN: 85RMAG
Language: English

Title: **Image coding using overlapped** wavelet **transform with permutation scan**
Author: Hur, Tae Won; **Kim, Jeong Woo** ; Kim, Eung Sung; **Choi, Joong Han** ; Lee, Keun Young
Abstract: In this paper, an overlapped **wavelet** transform (OWT) with permutation scan is presented. This transform is compared to **DCT** , constructed from PR-QMF-filter banks and Haar basis. Also permutation scanning achieves compression through efficiently representing the positional information caused by ordering the data information. A block OWT-based permutation coding algorithm(OWTPC) is developed and compared to **JPEG** . This mutually beneficial characteristics reduces the coding bit-rate. Simulation results are obtained for standard image, showing improvement of 0.2-0.3dB compared to **JPEG** in the peak-SNR index. (Author abstract) 5 Refs.
Descriptors: **Image** coding; **Wavelet** transforms; **Digital** filters; Scanning; **Image** compression; Algorithms; **Computer** simulation; Standards ; Signal to noise ratio; Signal filtering and prediction
Identifiers: Overlapped **wavelet** transforms; Permutation scan; Discrete cosine transforms; Coding bit rate

16/3,K/2 (Item 1 from file: 35)
DIALOG(R)File 35:Dissertation Abs Online

01643714 ORDER NO: AAD13-89459
IMAGE COMPRESSION USING WAVELET **TRANSFORM**
Author: **KIM, JUNG-HOON**
Degree: M.S.
Year: 1998
Corporate Source/Institution: TEXAS A&M UNIVERSITY-KINGSVILLE (1187)
Source: VOLUME 36/05 of MASTERS ABSTRACTS.
PAGE 1381. 72 PAGES

IMAGE COMPRESSION USING WAVELET **TRANSFORM**
Author: **KIM, JUNG-HOON**

This thesis discusses the compression of an image using **Wavelet**

Transform. Images are compressed at high compression ratio (low bit rate) by using **wavelet** image coding in Matlab. The reconstructed images using **Wavelet** Transform were compared to the current image compression standard based on the **Discrete Cosine Transform** (**DCT**), called **JPEG** , in terms of compression ratios and qualities. Also, the compression ratios are compared among different **wavelet** families.

16/3,K/3 (Item 1 from file: 65)
DIALOG(R)File 65:Inside Conferences

02601003 INSIDE CONFERENCE ITEM ID: CN027101430
H.236 + I-frame coding with a hybrid DCT / wavelet **transform (3460-36)**
Song, H.; **Kim, J.** ; Kuo, C.-C. J.
CONFERENCE: Applications of digital image processing-Conference; 21st
PROCEEDINGS-SPIE THE INTERNATIONAL SOCIETY FOR OPTICAL ENGINEERING, 1998
; ISSUE 3460 P: 320-329
SPIE, 1998
ISSN: 0277-786X ISBN: 0819429155
LANGUAGE: English DOCUMENT TYPE: Conference Papers
CONFERENCE EDITOR(S): Tescher, A. G.
CONFERENCE SPONSOR: SPIE
CONFERENCE LOCATION: San Diego, CA
CONFERENCE DATE: Jul 1998 (199807) (199807)

H.236 + I-frame coding with a hybrid DCT / wavelet **transform (3460-36)**
Song, H.; **Kim, J.** ; Kuo, C.-C. J.
DESCRIPTORS: **digital image** processing; **image** processing; SPIE
?

File 348:EUROPEAN PATENTS 1978-2004/Mar W03
(c) 2004 European Patent Office
File 349:PCT FULLTEXT 1979-2002/UB=20040325,UT=20040318
(c) 2004 WIPO/Univentio

Set	Items	Description
S1	105044	(IMAGE? ? OR PICTURE? ? OR PHOTO? ? OR GRAPHIC? OR PHOTOGRAPH?)(5N)(DIGITAL? OR BINARY? OR OPTICAL? OR ELECTRONIC? OR COMPUTER?) OR JPG OR JPGS OR JPEGS OR JPEG OR MPEG OR MPEGS OR GIF OR GIFS OR TIFF OR BMP
S2	3273	(WAVELET? ? OR WAVE()LET? ?)
S3	6610	DCT OR DISCRETE()COSINE()TRANSFORM
S4	266244	DIGITAL OR DIGITI? OR BINARY
S5	9809	WATERMARK? OR WATER()MARK? OR COPYRIGHT(W)PROTECT? OR DIGITAL(3N)(FINGERPRINT? OR FINGER(W)PRINT?) OR (ID OR IDS OR IDENTIFIER? ?)(5N)S4 OR STEGANOGRAPH? OR STEGANO()GRAPH?
S6	7063	S2 OR HAAR
S7	27	S1(S)S3(S)S5(S)S6
S8	27	IDPAT (sorted in duplicate/non-duplicate order)
S9	27	IDPAT (primary/non-duplicate records only)
S10	19	S9 AND AD=19980910:20020101/PR
S11	1	S9 AND AD=20020101:20040331/PR
S12	8	S9 NOT (S10 OR S11)
S13	75	S3(S)S5(S)S6
S14	75	IDPAT (sorted in duplicate/non-duplicate order)
S15	75	IDPAT (primary/non-duplicate records only)
S16	4	S15 AND AD=20020101:20040331/PR
S17	60	S15 AND AD=19980910:20020101/PR
S18	6	S15 NOT (S16 OR S17 OR S12)
S19	667	S3(S)S6
S20	32	S19 AND IC=G06K-009/00
S21	32	IDPAT (sorted in duplicate/non-duplicate order)
S22	32	IDPAT (primary/non-duplicate records only)
S23	23	S22 AND AD=19980910:20020101/PR
S24	4	S22 AND AD=20020101:20040331/PR
S25	5	S22 NOT (S23 OR S24 OR S12 OR S18)

12/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01651931
Moving image recording apparatus/method
Bewegtbilaufzeichnungsgerat und -verfahren
Methode et appareil d'enregistrement d'image animee
PATENT ASSIGNEE:
FUJITSU LIMITED, (211463), 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8588, (JP), (Applicant designated States: all)
INVENTOR:
Itoh, Hiroyasu, c/o Fujitsu Limited, 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki-shi, Kanagawa 211, (JP)
Akiyama, Ryota, c/o Fujitsu Limited, 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki-shi, Kanagawa 211, (JP)
Nakagawa, Toru, c/o Fujitsu Limited, 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki-shi, Kanagawa 211, (JP)
LEGAL REPRESENTATIVE:
Stebbing, Timothy Charles et al (59643), Haseltine Lake, Imperial House, 15-19 Kingsway, London WC2B 6UD, (GB)
PATENT (CC, No, Kind, Date): EP 1359541 A2 031105 (Basic)
APPLICATION (CC, No, Date): EP 2003015544 980330;
PRIORITY (CC, No, Date): JP 97235069 970829; JP 97237518 970902
DESIGNATED STATES: DE; FR; GB
RELATED PARENT NUMBER(S) - PN (AN):
EP 899688 (EP 98302407)
INTERNATIONAL PATENT CLASS: G06T-001/00
ABSTRACT WORD COUNT: 62
NOTE:
Figure number on first page: 3

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200345	397
SPEC A	(English)	200345	21138
Total word count - document A			21535
Total word count - document B			0
Total word count - documents A + B			21535

...SPECIFICATION watermark information in the principal parts of the content is made small. Thus, the watermark information is embedded inconspicuously.

There are also different schemes wherein **watermark** information is embedded by utilizing the existing techniques for image bandwidth compression. By way of example, Fraunhofer CRCG (in U. S.) has developed the scheme wherein, in embedding the **watermark** information in the process of the compression of the **JPEG** , that is, at the stage of linear quantization, a medium frequency coefficient among **DCT** output coefficients is varied, and the variation is used as the **watermark** information. Besides, NTT (in Japan) or NEC (in Japan) has developed the scheme wherein, when the conversion coefficient of **DCT** is to be linearly quantized, a coefficient value is changed little by little so as to form the **watermark** information. In addition, Mitsubishi Denki (in Japan) is developing conjointly with Kyushu University (in Japan), electronic **watermarking** which employs **wavelet** conversion. Kyoto Institute of Technology (in Japan) has proposed the scheme wherein the

watermark information is embedded in the moving vectors of **MPEG** . Concretely, a table in which the **watermark** bits of 100 bits are held in correspondence with the individual moving vectors existent in the number of 330 per frame, is prepared as secret information at each of transmission and reception ends. It is secretly utilized as a code table to check whether the **watermark** information is true or false.

Straightforwardly, problems related to the present invention are stated in the Call for Proposals made by the CPTWG/DHSG. In...

12/3,K/2 (Item 2 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01121279
Digital watermarking and methods for security documents
Erzeugung von digitalen Wasserzeichen und Verfahren fur Sicherheitsdokumente
Formation de filigranes numeriques et methodes pour documents de securite
PATENT ASSIGNEE:
Digimarc Corporation, (2160504), 19801 SW 72nd Avenue, Suite 250, Tualatin, Oregon 97062, (US), (Applicant designated States: all)
INVENTOR:
Rhoads, Geofrey B., 304 sw Tualatin Loop, West Linn, Oregon 97068, (US)
LEGAL REPRESENTATIVE:
Meddle, Alan Leonard et al (33761), FORRESTER & BOEHMERT Franz-Joseph-Strasse 38, 80801 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 981113 A2 000223 (Basic)
EP 981113 A3 010314
APPLICATION (CC, No, Date): EP 99113163 990707;
PRIORITY (CC, No, Date): US 127502 980731
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G07D-007/00; G07D-007/12; H04N-001/32; B42D-015/00
ABSTRACT WORD COUNT: 187
NOTE:
Figure number on first page: 12

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	200008	542
SPEC A	(English)	200008	8803
Total word count - document A			9345
Total word count - document B			0
Total word count - documents A + B			9345

...SPECIFICATION documents. However, it should be recognized that the principles discussed below can also be applied outside this area.

Most of the prior art in image **watermarking** has focused on pixelated imagery (e.g. bit-mapped images, **JPEG / MPEG** imagery, VGA/SVGA display devices, etc.). In most **watermarking** techniques, the luminance or color values of component pixels are slightly changed to effect subliminal encoding of **binary** data through the **image** . (This encoding can be done directly in the pixel domain, or after the signal has been processed and represented differently - e.g. as **DCT** or **wavelet** coefficients, or as compressed data, etc.)

While pixelated imagery is a relatively recent development, security

documents --commonly employing line art -- go back centuries. One familiar...

12/3,K/3 (Item 3 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01003410
Method for generating digital watermarks and for exchanging data containing digital watermarks
Verfahren zur Erzeugung von digitalen Wasserzeichen und zum Austausch von digitale Wasserzeichen enthaltenden Daten
Procede de generation de filigrames numeriques et d'echange de donnees comportant des filigrames
PATENT ASSIGNEE:
Digital Copyright Technologies AG, (2610630), Stauffacherstrasse 149, 8004 Zurich, (CH), (applicant designated states: AT;BE;CH;DE;DK;ES;FI;FR;GB;GR;IE;IT;LI;LU;MC;NL;PT;SE)
INVENTOR:
Herrigel, Alexander, Bergstrasse 62, 8706 Meilen, (CH)
Oruanaidh, Joseph J.K., Studio 11, Rue Jacques Dalphin 11, Carouge, 1227 Geneve, (CH)
Pun, Thierry, 60 Chemin de la Gradelle, 1224 Chene-Bougeries, (CH)
LEGAL REPRESENTATIVE:
Blum, Rudolf Emil Ernst et al (24791), c/o E. Blum & Co Patentanwalte Vorderberg 11, 8044 Zurich, (CH)
PATENT (CC, No, Kind, Date): EP 905967 A1 990331 (Basic)
APPLICATION (CC, No, Date): EP 97810708 970926;
PRIORITY (CC, No, Date): EP 97810708 970926
DESIGNATED STATES: AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
INTERNATIONAL PATENT CLASS: H04N-001/32;
ABSTRACT WORD COUNT: 154

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	9913	1292
SPEC A	(English)	9913	8684
Total word count - document A			9976
Total word count - document B			0
Total word count - documents A + B			9976

...SPECIFICATION spread spectrum communication for multimedia", Technical report, N.E.C. Research Institute, 1995). Early methods of encoding watermarks consisted of no more than incrementing an **image** component to encode a **binary** '1' and decrementing to encode a '0' (G. Caronni "Assuring Ownership Rights for **Digital Images** " in H. H. Brueggemann and W. Gerhardt-Haeckl, editors, Reliable IT Systems VIS '95, Vieweg Publishing Company, Germany, 1995). Tirkel et al. (A. Z. Tirkel, G. A. Rankin, R. G. van Schyndel, W. J. Ho, N. R. A. Mee, and C. F. Osborne, "Electronic **watermark** ", in Dicta-93, pages 666-672, Macquarie University, Sydney, December 1993) and van Schyndel et al. (A. Z. Tirkel, R. G. van Schyndel, and C. F. Osborne, "a two-dimensional digital **watermark** ", in ACCV'95, pages 378-383, University of Queensland, Brisbane, December 6-8 1995) have applied the properties of m-sequences to produce oblivious **watermarks** resistant to filtering, cropping and reasonably robust to cryptographic attack. Matsui and Tanaka (K. Matsui and K. Tanaka, "Video- **Steganography** : How to secretly embed a signature

in a picture", in IMA Intellectual Property Project Proceedings, pages 187-206, January 1994) have applied linear predictive coding for **watermarking** . Their approach to hiding a **watermark** is to make the **watermark** resemble quantization noise. Tirkel and Osborne (see above) were the first to note the applicability of spread spectrum techniques to **digital image watermarking** . Since then there has been an increasing use of spread spectrum in digital **watermarking** . It has several advantageous features, such as cryptographic security (see Tirkel and Osborne, above), and is capable of achieving error free transmission of the **watermark** near or at the limits given by the maximum channel capacity (J. Smith and B. Comiskey, "Modulation and information hiding in images", in Ross Anderson...

...Springer). Fundamental information theoretic limits to reliable communication have been discussed by some authors (see Smith and Comiskey, above). The shorter the payload of a **watermark** , the better are the chances of it being communicated reliably. Spread spectrum is an example of a symmetric key cryptosystem (B. Schneier, "Applied Cryptography", Wiley...

...1995). System security is based on proprietary knowledge of the keys (or pseudo random seeds) which are required to embed, extract or remove an image **watermark** . One provision in the use of a spread spectrum system is that it is important that the **watermarking** be non-invertible because only in this way can true ownership of the copyright material be resolved (S. Craver, N. Memon, B. Yeo, and M...

...Storage and Retrieval of Image and Video Databases", 1997). O Ruanaidh et al. (J. K. O Ruanaidh, W. J. Dowling, and F. M. Boland, "Phase **watermarking** of images", IEEE International Conference on Image Processing, Lausanne, Switzerland, September 1996) and Cox et al. (see above) have developed perceptually adaptive transform domain methods for **watermarking** . In contrast to previous approaches listed above the emphasis was on embedding the **watermark** in the most significant components of an image. The general approach used in these papers is to divide the image into blocks. Each block is mapped into the transform domain using either the **Discrete Cosine Transform** (W. B. Pennebaker and J. L. Mitchell, " **JPEG** Still Image Compression Standard", Van Nostrand Reinhold, New York, 1993), the Hadamard Transform (W. G. Chambers, "Basics of Communications and Coding", Oxford Science Publications. Clarendon Press Oxford, 1985) or the Daubechies **Wavelet** Transform (W.H. Press, S.A. Teukolsky, W.T. Vetterling, and B.P. Flannery, "Numerical Recipes in C", Cambridge University Press, second edition, 1992). Information has been embedded using the **DCT** (J. J. K. O Ruanaidh, W. J. Dowling, and F. M. Boland, " **Watermarking digital images** for **copyright protection** ", IEEE Proceedings on Vision, Image and Signal Processing, 143(4) :250-256, August 1996, based on the paper of the same title at the IEEE Conference on Image Processing and Its Applications, Edinburgh, July 1995) FFT magnitude, and phase, **Wavelets** (see refs. of Ruanaidh, Dowling and Boland, above), Linear Predictive Coding (see Matsui et al., above) and fractals (P. Davern and M. Scott, "Fractal based image **steganography** ", in Ross Anderson, ed., Proceedings of the First International Workshop in Information Hiding, Lecture Notes in Computer Science, pp. 279-294, Cambridge, UK, May/June...

12/3,K/4 (Item 4 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00995264

Device for generating, detecting, recording, and reproducing a watermarked moving image

Gerat zum Erzeugen, Detektieren, Aufzeichnen und Wiedergeben eines Wasserzeichen-Bewegtbildes

Dispositif de generation, detection, enregistrement et de reproduction d'images filigrane mouvantes

PATENT ASSIGNEE:
FUJITSU LIMITED, (211463), 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8588, (JP), (Applicant designated States: all)
INVENTOR:
Itoh, Hiroyasu, c/o Fujitsu Limited, 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8588, (JP)
Akiyama, Ryota, c/o Fujitsu Limited, 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8588, (JP)
Nakagawa, Toru, c/o Fujitsu Limited, 1-1, Kamikodanaka 4-chome, Nakahara-ku, Kawasaki-shi, Kanagawa 211-8588, (JP)
LEGAL REPRESENTATIVE:
Stebbing, Timothy Charles et al (59641), Haseltine Lake & Co., Imperial House, 15-19 Kingsway, London WC2B 6UD, (GB)
PATENT (CC, No, Kind, Date): EP 899688 A2 990303 (Basic)
EP 899688 A3 010124
APPLICATION (CC, No, Date): EP 98302407 980330;
PRIORITY (CC, No, Date): JP 97235069 970829; JP 97237518 970902
DESIGNATED STATES: DE; FR; GB
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
RELATED DIVISIONAL NUMBER(S) - PN (AN):
(EP 2003015544)
INTERNATIONAL PATENT CLASS: G06T-011/00; G06T-001/00
ABSTRACT WORD COUNT: 160
NOTE:
Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	9909	1178
SPEC A	(English)	9909	21221
Total word count - document A			22399
Total word count - document B			0
Total word count - documents A + B			22399

...SPECIFICATION watermark information in the principal parts of the content is made small. Thus, the watermark information is embedded inconspicuously.

There are also different schemes wherein **watermark** information is embedded by utilizing the existing techniques for image bandwidth compression. By way of example, Fraunhofer CRCG (in U. S.) has developed the scheme wherein, in embedding the **watermark** information in the process of the compression of the **JPEG** , that is, at the stage of linear quantization, a medium frequency coefficient among **DCT** output coefficients is varied, and the variation is used as the **watermark** information. Besides, NTT (in Japan) or NEC (in Japan) has developed the scheme wherein, when the conversion coefficient of **DCT** is to be linearly quantized, a coefficient value is changed little by little so as to form the **watermark** information. In addition, Mitsubishi Denki (in Japan) is developing conjointly with Kyushu University (in Japan), electronic **watermarking** which employs **wavelet** conversion. Kyoto Institute of Technology (in Japan) has proposed the scheme wherein the **watermark** information is embedded in the moving vectors of **MPEG** . Concretely, a table in which the **watermark** bits of 100 bits are held in

correspondence with the individual moving vectors existent in the number of 330 per frame, is prepared as secret information at each of transmission and reception ends. It is secretly utilized as a code table to check whether the **watermark** information is true or false.

Straightforwardly, problems related to the present invention are stated in the Call for Proposals made by the CPTWG/DHSG. In...

12/3,K/5 (Item 1 from file: 349)

DIALOG(R)File 349:PCT FULLTEXT

00549763 **Image available**

WATERMARKING SYSTEM AND METHODOLOGY FOR DIGITAL MULTIMEDIA CONTENT

SYSTEME DE FORMATION DE FILIGRANE ET METHODOLOGIE DESTINEE A UN CONTENU MULTIMEDIA NUMERIQUE

Patent Applicant/Assignee:
DIGITAL VIDEO EXPRESS L P,
IU Siu-Leong,
DAVIS Malcom,
LUO Hui,
LIN Yun-Ting,
MERCIER Guillaume,
BUGWADIA Kobad,

Inventor(s):
IU Siu-Leong,
DAVIS Malcom,
LUO Hui,
LIN Yun-Ting,
MERCIER Guillaume,
BUGWADIA Kobad,

Patent and Priority Information (Country, Number, Date):
Patent: WO 200013136 A1 20000309 (WO 0013136)
Application: WO 99US19723 19990831 (PCT/WO US9919723)
Priority Application: US 9898687 19980831

Designated States: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CR CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW GH GM KE LS MW SD SL SZ UG ZW AM AZ BY KG KZ MD RU TJ TM AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG

Publication Language: English

Fulltext Word Count: 24626

Fulltext Availability:
Detailed Description

Detailed Description

... techniques that operate in the spatial domain on uncompressed video can protect the video at these outputs and are viable for such devices.

Transform domain **watermarking** techniques often have high complexity. Usually, a **DCT** , FFT, or **wavelet** transform of an entire image and its inverse is computed. The computational burden is substantial. If the **watermark** needs to be added to an **MPEG** bitstrearn, decoding and reencoding also are required. Despite the high complexity, transform domain techniques are the most common approach to **watermarking** (at least, when computational complexity is not an issue). The relevance of these transforms, especially the **DCT** and **wavelet** , to human perception is a major reason for this popularity. Another reason is that these

transforms are natural operating domains for spread spectrum techniques. The **MPEG** bitstream format does not impose any constraints in the transform domain. It is possible, however, for some transform domain techniques to take advantage of the 8x8 DCTs in the **MPEG** bitstream.

The method of Swanson, Zhu, and Tewfik is an interesting example of a transform domain technique. The (uncompressed) video to be watermarked is segmented...OPIMA terminal, would need to insert the tracing watermarks into content.

If one surveys current waterinarking techniques, the idea of a consumer electronics device inserting **watermarks** into video in real-time appears impractical at first because of the complexity involved and the large amount of computation required. These techniques commonly perform video scene analysis, compute frequency transforms (e.g., the **DCT** , FFT, or **wavelet** transform) on large parts of the video, and invoke models of human perception. In addition, most techniques operate on uncompressed video whereas most consumer electronics devices receive compressed video (e.g., an **MPEG** bitstream). A few **watermarking** techniques operate on an **MPEG** bitstream by modifying the coefficients of the 8x8 **DCT** blocks [3,4]. In this case, the VLCs (Huffman codes) are decoded, inverse quantization is performed to get the **DCT** coefficients, the **DCT** coefficients are modified to introduce the **watermarks** , the modified coefficients are quantized, and replacement VLCs are generated by Huffman encoding the **DCT** coefficients. The complexity and computation required to do all this in real-time is substantial.

A more realistic alternative is to insert waten-narks by...

12/3,K/6 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00543983
DIGITAL WATERMARKS AND METHODS FOR SECURITY DOCUMENTS
FILIGRANES NUMERIQUES ET PROCEDES POUR DOCUMENTS DE SECURITE OU ANALOGUES
Patent Applicant/Assignee:
DIGIMARC CORPORATION,
RHOADS Geoffrey B,
Inventor(s):
RHOADS Geoffrey B,
Patent and Priority Information (Country, Number, Date):
Patent: WO 200007356 A2 20000210 (WO 0007356)
Application: WO 99US14532 19990624 (PCT/WO US9914532)
Priority Application: US 98127502 19980731
Designated States: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW GH GM KE LS MW SD SL SZ UG ZW AM AZ BY KG KZ MD RU TJ TM AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
Publication Language: English
Fulltext Word Count: 10321
Fulltext Availability:
Detailed Description

Detailed Description
... documents. However, it should be recognized that the principles discussed below can also be applied outside this area.

Most of the prior art in image **watermarking** has focused on pixelated imagery (e.g. bit-mapped images, **JPEG / MPEG** imagery, VGA/SVGA display devices, etc.). In most waterinarking techniques, the luminance or color values of component pixels are slightly changed to effect subliminal encoding of I 0 **binary** data through the **image** . (This encoding can be done directly in the pixel domain, or after the signal has been processed and represented differently - e.g. as **DCT** or **wavelet** coefficients, or as
compressed data, etc.)
While pixelated imagery is a relatively recent development, security documents -- commonly employing line art -- go back centuries. One familiar...

12/3,K/7 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00447049 **Image available**
INVISIBLE DIGITAL WATERMARKS
FILIGRANES NUMERIQUES INVISIBLES
Patent Applicant/Assignee:
TELSTRA R & D MANAGEMENT PTY LTD,
JOHNSON Andrew,
BIGGAR Michael,
Inventor(s):
JOHNSON Andrew,
BIGGAR Michael,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9837513 A1 19980827
Application: WO 98AU106 19980220 (PCT/WO AU9800106)
Priority Application: AU 975218 19970220
Designated States: AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GE GH GM GW HU ID IL IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZW GH GM KE LS MW SD SZ UG ZW AM AZ BY KG KZ MD RU TJ TM AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN ML MR NE SN TD TG
Publication Language: English
Fulltext Word Count: 7125

Fulltext Availability:
Detailed Description

Detailed Description
... rectangular blocks, and each block is then transformed using either a Walsh transform, discrete cosine transform (DCT) or wavelet transform. The bits defining the watermark **graphic** are inserted in the **digital image** by incrementing or decrementing a selected coefficient in the transform domain of the data block. Coefficients are selected according to a criterion based on energy content. Another algorithm described in the article relates to insertion of **watermark** data based on the use of the discrete Fourier transform (DFT). This method differs fundamentally from the transform domain technique outlined above. The DFT is a complex transform that generates complex transform domain coefficients given a real valued input. The **watermark** is placed in the phase component of generated transform coefficients when using this transform.

Another article which addresses the difficult issues of digital

watermarking is...

12/3,K/8 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00437046 **Image available**
COMPRESSION EMBEDDING
INTEGRATION POUR LA COMPRESSION
Patent Applicant/Assignee:
THE REGENTS OF THE UNIVERSITY OF CALIFORNIA,
SANDFORD Maxwell T II,
HANDEL Theodore G,
BRADLEY Jonathan N,
Inventor(s):
SANDFORD Maxwell T II,
HANDEL Theodore G,
BRADLEY Jonathan N,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9827510 A1 19980625
Application: WO 97US23291 19971216 (PCT/WO US9723291)
Priority Application: US 96772188 19961219
Designated States: AL AM AT AU AZ BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU IL IS JP KE KG KP KR KZ LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG UZ VN GH GM KE LS MW SD SZ UG ZW AM AZ BY KG KZ MD RU TJ TM AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN ML MR NE SN TD TG
Publication Language: English
Fulltext Word Count: 10233

Fulltext Availability:
Detailed Description

Detailed Description
... images compressed with lossy methods.

Redundancy and uncertainty are intrinsic to lossy compression methods. Two examples of lossy compression are the Joint Photographic Experts Group (**JPEG**) standard, and the Wavelet Scalar Quantization (WSQ) algorithm that has been adopted by the Federal Bureau of Investigation for the electronic interchange of **digital fingerprint** information. A similar compression standard established by the Moving Picture Experts Group (**MPEG**) is used for digital television and multi--media imagery. The **JPEG** and **MPEG** algorithms are based on the **Discrete Cosine Transform** (**DCT**) representation of the host data. The WSQ method is based on a representation of the host data in terms of **wavelet** functions. In the methods, the host data representation exists in an intermediate stage as a sequence of blocks of integer values referred to as 'indices...
...fidelity occurs because the 1 5 transform coefficients that represent the original data are quantized to a finite number of integer representations. The above mentioned **JPEG** , WSQ, and **MPEG** methods apply some form of loss-less compression to the integer coefficient blocks, resulting in doubly compressed data approximating the original image.

In the normal...
?

18/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

01093337
Digital watermarking and banknotes
Erzeugung von digitalen Wasserzeichen und Banknoten
Formation de filigranes numeriques et de billets de banque
PATENT ASSIGNEE:
Digimarc Corporation, (2160504), 19801 SW 72nd Avenue, Suite 250, Tualatin, Oregon 97062, (US), (Applicant designated States: all)
INVENTOR:
Rhoads, Geoffrey B., 304 SW Tualatin Loop, West Linn Oregon 97068, (US)
LEGAL REPRESENTATIVE:
Meddle, Alan Leonard (33761), FORRESTER & BOEHMERT Franz-Joseph-Strasse 38, 80801 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 961239 A2 991201 (Basic)
EP 961239 A3 010228
APPLICATION (CC, No, Date): EP 99107280 990414;
PRIORITY (CC, No, Date): US 82228 980416; US 74034 980506
DESIGNATED STATES: AT; BE; CH; CY; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: G07D-007/00; G07D-007/12; H04N-001/32; B42D-015/00
ABSTRACT WORD COUNT: 197
NOTE:
Figure number on first page: 9

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	9948	1273
SPEC A	(English)	9948	7547
Total word count - document A			8820
Total word count - document B			0
Total word count - documents A + B			8820

...SPECIFICATION the line is made wider (i.e. more ink).
Whether the luminance in a given region should be increased or decreased depends on the particular **watermarking** algorithm used. Any algorithm can be used, by changing the luminosity of regions 12 as the algorithm would otherwise change the luminance or colors of pixels in a pixelated image. (Some **watermarking** algorithms effect their changes in a transformed domain, such as **DCT** , **wavelet** , or Fourier. However, such changes are ultimately manifested as changes in luminance or color.)
In an exemplary algorithm, the binary data is represented as a...

18/3,K/2 (Item 2 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00983445
Apparatus and method for watermark data insertion and apparatus and method for watermark data detection
Wasserzeichendateneinfugensvorrichtung und -Verfahren und Wasserzeichendaten erkennungsvorrichtumng und -Verfahren
Dispositif et procede d'insertion de donnees de filigrane et dispositif et

procede pour la detection de donnees de filigrane
PATENT ASSIGNEE:
Matsushita Electric Industrial Co., Ltd., (1855508), 1006, Oaza-Kadoma, Kadoma-shi, Osaka 571-8501, (JP), (applicant designated states: AT;BE;CH;CY;DE;DK;ES;FI;FR;GB;GR;IE;IT;LI;LU;MC;NL;PT;SE)
INVENTOR:
Senoh, Takanori, 1-24-8, Higashinakaburi, Hirakata-shi, Osaka, (JP)
LEGAL REPRESENTATIVE:
Schwabe - Sandmair - Marx (100951), Stuntzstrasse 16, 81677 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 891071 A2 990113 (Basic)
EP 891071 A3 990721
APPLICATION (CC, No, Date): EP 98112561 980707;
PRIORITY (CC, No, Date): JP 97183429 970709
DESIGNATED STATES: DE; FR; GB; IT
INTERNATIONAL PATENT CLASS: H04N-001/32;
ABSTRACT WORD COUNT: 153

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	9902	1052
SPEC A	(English)	9902	5474
Total word count - document A			6526
Total word count - document B			0
Total word count - documents A + B			6526

...SPECIFICATION copying of such works in the field of digital contents containing images and/or sounds.
In accordance with one embodiment of the present invention, a **wavelet** transform encompasses the pixel information of the entire single frame regardless of the subband that is being used. Therefore, **watermark** data can be easily embedded in the entire image through one **watermark** data insertion process. The method of the present invention also prevents block distortion, which is typically observed in **DCT** transform.
In accordance with one embodiment of the present invention, watermark data is inserted with its amplitude being adjusted in accordance with the luminance values...

18/3,K/3 (Item 3 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00921325
Digital data watermarking
Erzeugung von Wasserzeichen fur digitalen Daten
Formation de filigranes dans des donnees numeriques
PATENT ASSIGNEE:
NEC CORPORATION, (236690), 7-1, Shiba 5-chome, Minato-ku, Tokyo, (JP), (Applicant designated States: all)
INVENTOR:
Cox, Ingemar J., 21 LeParc Drive, Lawrenceville, NJ 08648, (US)
Miller, Matthew L., Ligonines 6-8, Vilnius, (LT)
Tanaka, Kazuyoshi, c/o NEC Corporation, 7-1 Shiba 5-chome, Minato-ku, Tokyo, (JP)
Wakasu, Yutaka, c/o NEC Corporation, 7-1 Shiba 5-chome, Minato-ku, Tokyo, (JP)
LEGAL REPRESENTATIVE:
VOSSIUS & PARTNER (100314), Siebertstrasse 4, 81675 Munchen, (DE)
PATENT (CC, No, Kind, Date): EP 840513 A2 980506 (Basic)

EP 840513 A3 000524
APPLICATION (CC, No, Date): EP 97119231 971104;
PRIORITY (CC, No, Date): US 746022 961105
DESIGNATED STATES: DE; FR; GB; NL
EXTENDED DESIGNATED STATES: AL; LT; LV; MK; RO; SI
INTERNATIONAL PATENT CLASS: H04N-007/24; H04N-001/32; H04N-007/30
ABSTRACT WORD COUNT: 37
NOTE:
Figure number on first page: 2

LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS A	(English)	9819	1019
SPEC A	(English)	9819	5258
Total word count - document A			6277
Total word count - document B			0
Total word count - documents A + B			6277

...SPECIFICATION mapper 11 is provided to a spectral transformer 12, which converts the pseudo-random noise sequence into the frequency domain. The conversion preferably is by **discrete cosine transform (DCT)**, however, fast fourier transform, **wavelet** type decomposition and the like may also be used for frequency conversion. Concurrently, the data to be **watermarked** is provided to another spectral transformer 13. ...as inputs to a spectral shaper 14, which modifies the spectral properties of the pseudo-random noise codes from spectral transformer 12 to mask the **watermark** when added to the image data The spectrally transformed data to be **watermarked** , from spectral transformer 13, is also provided as an input to a delay 15. The output of the spectral shaper 14 is then added to...

...output of delay 15 at a summer 16. The summer output is subject to an inverse transform 17. The result of the inverse transform is **watermarked** data.
INSERT-MPEG-A differs from INSERT-WHOLE by segmenting the data to be watermarked into multiple blocks, such as 8x8 pixel subimages or subregions...

18/3,K/4 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00532153 **Image available**
METHOD FOR DATA PREPARATION AND WATERMARK INSERTION
PROCEDE DE PREPARATION DE DONNEES ET D'INSERTION DE FILIGRANES
Patent Applicant/Assignee:
SIGNAFY INC,
Inventor(s):
BLOOM Jeffrey A,
COX Ingemar J,
MILLER Matthew L,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9963505 A1 19991209
Application: WO 99US8216 19990416 (PCT/WO US9908216)
Priority Application: US 9892431 19980605
Designated States: CA JP AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Publication Language: English

Fulltext Word Count: 6072

Fulltext Availability:
Detailed Description
Detailed Description
... data 6 will be sufficiently similar to
the signal derived from the watermark pattern 5 to indicate a
positive detection decision.

Insertion of the first **watermark** involves a modification of
the unwatermarked data such that a set of data
characteristics, or a signal derived from a set of data
characteristics, will closely match a known **watermark** signal,
alternately referred to as a signal derived from a set of
characteristics of a **watermark**0 pattern. The set of data
characteristics considered may be derived from the data in the
spatial domain, the temporal domain, and/or a transformed
domain...

...which data
characteristics can be derived. In the preferred embodiment,
the data characteristics are derived from the data in both the
spatial and the block **DCT** domains. Other local transform
domains such as block Fourier transform, Hadamard transform,
cortex transform, and **wavelets** as well as global transform
domains such as the **DCT** and Fourier transform may be used.
Spatial and temporal domain characteristic that can be used
include sample value, edge features, color characteristics,
textures, and phonemes...

18/3,K/5 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00532091 **Image available**
METHODS FOR EMBEDDING IMAGE, AUDIO AND VIDEO WATERMARKS IN DIGITAL DATA
PROCEDES PERMETTANT D'INTEGRER DES FILIGRANES DE TYPE IMAGES, AUDIO ET VIDEO DANS DES DONNEES NUMERIQUES
Patent Applicant/Assignee:
DATAMARK TECHNOLOGIES PTE LTD,
HO Anthony Tung Shuen,
TAM Siu Chung,
Inventor(s):
HO Anthony Tung Shuen,
TAM Siu Chung,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9963443 A1 19991209
Application: WO 98SG39 19980601 (PCT/WO SG9800039)
Priority Application: WO 98SG39 19980601
Designated States: AU CA CN ID JP KR SG US AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Publication Language: English
Fulltext Word Count: 9219

Fulltext Availability:
Detailed Description
Claims

English Abstract

A method for embedding an entire image, audio or video **watermark** sequence within another image, audio or video data sequence with minimum loss of data quality is presented. The method exploits the de-correlation property of data coefficients in the orthogonal transform domain, similar to the application in data compression through transform coding. The present invention describes the usage of a **Discrete Cosine Transform** as the embedding domain. However, other orthogonal transforms such as Fourier, Walsh-Hadamard, **Haar** , Sine and **Wavelet** can also be used for this operation. A unique key derived adaptively from spatial locations registering the thresholds of the ac transform energies is used to unlock or de- **watermark** the embedded image or audio sequence. Moreover, an exponential filter has been developed to compress and expand the **watermark** coefficients prior to the embedding and retrieval process. The method can be used in resolving multimedia **copyright protection** issues arising on the Internet and in the music industry, such as the inclusion of a company's logo or an artist's recorded voice...

Detailed Description
... and
Figure 13 illustrates a block diagrain of a personal identification card encoder/decoder.

Detailed description of embodiments of the invention
Embodiments of a digital **watermarking** method will now be described in which 1 5 the coefficients of a Discrete Cosine Transform (**DCT**) are employed. However, implementations of the invention are not limited solely to the use of **DCT** , and other orthogonal transforms such as discrete Fourier, Walsh-Hadamard, **Haar** , Sine and **Wavelet** transforms can also be used to good effect. In the preferred embodiment, both unlabelled data and **watermark** image data are first converted into two-dimensional matrices and then divided into sub-blocks, prior to orthogonal transformation. The present invention requires that the dimension size of the unlabelled data set must be at least twice the dimension size of the **watermark** data in each dimension, to fulfil a requirement that is closely related to the concept of the Shannon's sampling theorem.

For example, for a...method exploits the de-correlation property of orthogonal transforms for embedding and retrieving digital watermarks.

Although the proposed method describes mainly the use of a **discrete cosine transform** as the domain for **watermarking** ; however, orthogonal transforms such as Fourier, Walsh-Hadamard, **Haar** , Sine and **Wavelet** can also be applied. Instead of the current **watermarking** technology of embedding text strings into digital data, the proposed method would provide additional complementary proof as to the true ownership of the digital data...

...a recording of the artist's voice, making a copyright infringement claim easier to substantiate than when just a text string is applied as the **watermark** .

The ability of the proposed method to embed and retrieve an entire audio or imacre watermark is a significant advantage over current prior art techniques...

Claim
... transform is an inverse DCT.

21 The method as claimed in any one of claims 1 to 20, wherein the

orthogonal transform performed on the **watermark** data is one of. a Discrete Cosine
Transform (**DCT**); a Fourier transform; a Walsh-Hadamard transform; a **Haar**
transform; a sine transform; and a **Wavelet** transform.

22 The method as claimed in claim 2 1, wherein the orthogonal transform performed on the watermark data is a Discrete Cosine Transform (DCT... data is a DCT.

51 The method as claimed in any one of claims 37 to 50, wherein the inverse orthogonal transform performed on the **watermark** data is one of- an inverse Discrete Cosine Transform (**DCT**); an inverse Fourier transform; an inverse WalshHadamard transform; an inverse **Haar** transform; an inverse sine transform; and an
inverse **Wavelet** transform.
52 The method as claimed in claim 5 1, wherein the inverse orthogonal transfarrn performed on the watermark data is an inverse DCT.
0...

18/3,K/6 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00522076 **Image available**
DIGITAL WATERMARKING AND BANKNOTES
IMPRESSION DE FILIGRANES NUMERIQUES ET BILLETS DE BANQUE
Patent Applicant/Assignee:
DIGIMARC CORPORATION,
RHOADS Geoffrey B,
Inventor(s):
RHOADS Geoffrey B,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9953428 A1 19991021
Application: WO 99US8252 19990414 (PCT/WO US9908252)
Priority Application: US 9882228 19980416; US 9874034 19980506
Designated States: AE AL AM AT AU AZ BA BB BG BR BY CA CH CN CU CZ DE DK EE ES FI GB GD GE GH GM HR HU ID IL IN IS JP KE KG KP KR KZ LC LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK SL TJ TM TR TT UA UG US UZ VN YU ZA ZW GH GM KE LS MW SD SL SZ UG ZW AM AZ BY KG KZ MD RU TJ TM AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN GW ML MR NE SN TD TG
Publication Language: English
Fulltext Word Count: 13915
Fulltext Availability:
Detailed Description

Detailed Description
... the line is made wider (i.e. more ink).

Whether the luminance in a given region should be increased or decreased depends on the particular **watermarking** algorithm used. Any algorithm can be used, by changing the luminosity of 10 regions 12 as the algorithm would otherwise change the luminance or colors of pixels in a pixelated image. (Some **watermarking** algorithms effect their changes in a transformed domain, such as **DCT** , **wavelet** , or Fourier. However, such changes are ultimately manifested as changes in luminance or color.)
In an exemplary algorithm. the binary data is represented as a...

25/3,K/1 (Item 1 from file: 348)
DIALOG(R)File 348:EUROPEAN PATENTS

00849810
A METHOD OF COMPRESSING A PLURALITY OF VIDEO IMAGES
VERFAHREN ZUR KOMPRESSION MEHRERER VIDEOBILDER
PROCEDE DE COMPRESSION DE PLUSIEURS IMAGES VIDEO
PATENT ASSIGNEE:
Interval Research Corporation, (2003310), Building C, 1801 Page Mill Road , Palo Alto, CA 94304, (US), (Proprietor designated states: all)
INVENTOR:
Ahmad, Subutai, 946 Colorado Avenue, Palo Alto, CA 94303, (US)
LEGAL REPRESENTATIVE:
Jackson, David Spence et al (32231), REDDIE & GROSE 16, Theobalds Road, London, WC1X 8PL, (GB)
PATENT (CC, No, Kind, Date): EP 804774 A1 971105 (Basic)
EP 804774 A1 990224
EP 804774 B1 030521
WO 97010564 970320
APPLICATION (CC, No, Date): EP 96931565 960913; WO 96US14722 960913
PRIORITY (CC, No, Date): US 528891 950915
DESIGNATED STATES: AT; BE; CH; DE; DK; ES; FI; FR; GB; GR; IE; IT; LI; LU; MC; NL; PT; SE
INTERNATIONAL PATENT CLASS: **G06K-009/00** ; G06T-009/00
NOTE:
No A-document published by EPO
LANGUAGE (Publication,Procedural,Application): English; English; English
FULLTEXT AVAILABILITY:

Available Text	Language	Update	Word Count
CLAIMS B	(English)	200321	949
CLAIMS B	(German)	200321	878
CLAIMS B	(French)	200321	999
SPEC B	(English)	200321	4687
Total word count - document A			0
Total word count - document B			7513
Total word count - documents A + B			7513

INTERNATIONAL PATENT CLASS: **G06K-009/00** ...

...SPECIFICATION will be seen. the method of the present invention is not limited by the technique of principal component analysis. For example, image values derived by **discrete cosine transform** , Gabor filters and **wavelets** can also be used. However, using the method of principal component analysis, one or more parameters is generated. Initially, the discussion will focus on the...

...CLAIMS plurality of video images.
23. A method according to claim 22, characterised in that each video image of the said first plurality is compressed by **discrete cosine transform** or by Gabor filters or by **wavelets** .
24. A method according to claim 4, characterised by the steps of comparing each video image with one of the video images having an image...

25/3,K/2 (Item 1 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00474499
METHOD OF ISOMORPHIC SINGULAR MANIFOLD PROJECTION STILL/VIDEO IMAGERY COMPRESSION
PROCEDE DE COMPRESSION D'IMAGES FIXES/VIDEO PAR PROJECTION MULTIPLE DE SINGULARITES ISOMORPHES
Patent Applicant/Assignee:
PHYSICAL OPTICS CORPORATION,
Inventor(s):
KOSTRZEWSKI Andrew,
TERNOVSKIY Igor,
JANNSON Tomasz P,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9905851 A2 19990204
Application: WO 98US15962 19980727 (PCT/WO US9815962)
Priority Application: US 97901832 19970728
Designated States: JP KR AT BE CH CY DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Publication Language: English
Fulltext Word Count: 24363

Main International Patent Class: **G06K-009/00**
Fulltext Availability:
Detailed Description

Detailed Description
... capacity without information loss.

The vast majority of compression standards in existence today relate to lossy compression. These techniques typically use cosine-type transforms like **DCT** and **wavelet** compression, which are specific types of transforms, and have a tendency to lose high frequency information due to limited bandwidth. The "edges" of images typically...compressed separately at step 22.

At step 22, standard lossy texture compression of the newly created frameId is performed by using standard methods such as **DCT** , **wavelet** , and fractal. methods.

At step 22, standard additional lossless compression is also performed. The output of step 22 is Id'which then is fed into...

25/3,K/3 (Item 2 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
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00431224 **Image available**
METHOD AND APPARATUS FOR EFFICIENTLY REPRESENTING, STORING AND ACCESSING VIDEO INFORMATION
PROCEDE ET APPAREIL PERMETTANT DE REPRESENTER, DE METTRE EN MEMOIRE ET D'ACCEDER DE MANIERE EFFICACE A DES INFORMATIONS VIDEO
Patent Applicant/Assignee:
SARNOFF CORPORATION,
Inventor(s):
BERGEN James R,
CARLSON Curt,
KUMAR Rakesh,
SAWHNEY Harpreet S,
Patent and Priority Information (Country, Number, Date):

Patent: WO 9821688 A1 19980522
Application: WO 97US20652 19971114 (PCT/WO US9720652)
Priority Application: US 9631003 19961115
Designated States: BR CA CN JP KR MX AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Publication Language: English
Fulltext Word Count: 12763
Main International Patent Class: **G06K-009/00**
Fulltext Availability:
Detailed Description

Detailed Description
... values obtained by such subtraction are regarded as residuals. As discussed in U.S. Application No. 08/339,491, foreground residuals may be encoded using **discrete cosine transform (DCT)**, **wavelet** or other compression techniques.

Video scenes may also be represented in terms of "layers." Layers are an extension to the basic mosaic concept for representing...

25/3,K/4 (Item 3 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT
(c) 2004 WIPO/Univentio. All rts. reserv.

00394532 **Image available**
REPRESENTATION AND ENCODING OF GENERAL ARBITRARY SHAPES
REPRESENTATION ET CODAGE DE FORMES GENERALES ARBITRAIRES
Patent Applicant/Assignee:
MICROSOFT CORPORATION,
Inventor(s):
CHEN Wei-Ge,
LEE Ming-Chieh,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9735275 A1 19970925
Application: WO 97US4662 19970321 (PCT/WO US9704662)
Priority Application: US 96621120 19960322
Designated States: DE GB JP AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE
Publication Language: English
Fulltext Word Count: 24552

Main International Patent Class: **G06K-009/00**
Fulltext Availability:
Detailed Description
Detailed Description
... subband (wavelet) compression or encoding as described in Multirate Systems and Filter Banks by Vaidyanathan, PTR Prentice-Hall, Inc., Englewood Cliffs, New Jersey, (1993) or **discrete cosine transform (DCT)** encoding as described in JPEG: Still Image Data Compression Standard by Pennebaker et al., Van Nostrand Reinhold, New York (1993).

As is known in the...indicates that master object 90 is compressed or coded by a conventional I'lossy" still image compression method such as lattice subband (wavelet) compression or **discrete cosine transform (DCT)** encoding. Preferably, function block 132 employs **wavelet** encoding.

Function block 134 indicates that the wavelet encoded master object from function block 132 is further compressed or coded by a conventional I'lossless...process 64 (both of Fig. 3). Extrapolation method 400 allows the compression of function block 112 to be performed in a conventional manner such as **DCT** or lattice **wavelet** compression, as described above.
Conventional still image compression methods such a lattice **wavelet** compression or discrete cosine transforms (**DCT**) operate upon rectangular arrays of pixels. As described above, however, the methods of the present invention are applicable to image features or objects of arbitrary configuration. Extrapolating such objects or image features to a rectangular pixel array configuration allows use of conventional still image compression methods such as lattice **wavelet** compression or **DCT** . Extrapolation method 400 is described below with reference to Figs. 18A-18D, which are representations of display screen 50 on which a simple object 402...providing the encoding described with reference to function block 112 of video compression encoder process 64 shown in Fig.

3, as well as whenever else **DCT** on **wavelet** encoding is suggested or used. By way of example, encoder method 500 is described with reference to encoding of estimated error 110 (Fig. 3).

A...dense
motion vector field with its extrapolated regular configuration is encoded or compressed according to conventional encoding transformations such as, for example, discrete cosine transformation (**DCT**) or lattice **wavelet** compression, the former of which is preferred.

Function block 568 indicates that the encoded dense motion vector field is further compressed or encoded by a cosine transform (**DCT**) encoding or lattice subband (**wavelet**) compression.

Function block 604 indicates that the encoded or compressed quantized objects are stored in a memory buffer (not shown).

Function block 606 indicates that...

...processing a corresponding object in a next successive video frame.

Function block 608 indicates that the encoded quantized object is inverse encoded by, for example, **DCT** or **wavelet** decoding according to the encoding processes employed with respect to function block 602.

Codec process 600 allows the capacity of the corresponding memory buffer to...block 112 (Fig. 3A). In the preferred embodiment, the decompression or decoding of function block 728 is by a lattice subband (wavelet) process or a **discrete cosine transform** (**DCT**) process.

Function block 722 provides quantized object 730

for frame N as the sum of predicted object 720 and quantized error 724, representing a reconstructed...values for objects of arbitrary
configuration to a predefined configuration to facilitate compression or encoding in a conventional manner, such as by discrete cosine transform (**DCT**) or lattice **wavelet** compression, as described above.

This combination of hierarchical encoding process 1130 and precompression extrapolation method 400 allows transparency data to be encoded efficiently while maintaining 1172 indicates that the extrapolated transparency data are encoded by an intraframe encoding process such as **DCT** or lattice **wavelet** encoding. It will be appreciated, however, that 30 interframe encoding as described above with reference to process 64 can also be applied to the transparency data, resulting in a residual signal that preferably would be encoded by **DCT** or lattice **wavelet** encoding.

Encoding process 1160 provides as compressed 35 or encoded data for storage or transmission an encoded boundary representation at process block 1168 and an...

...of the transparency data at process block 1172. Decoding of this information includes conventional intra-frame decoding 5 of the transparency value data (e.g. **DCT** or **wavelet**), decoding the boundary information corresponding to the binary transparency objects identified by the threshold filter of process block 1164, and applying the decoded boundary information...

25/3,K/5 (Item 4 from file: 349)
DIALOG(R)File 349:PCT FULLTEXT

00354421
COMPRESSION EMBEDDING
INTEGRATION DE DONNEES DANS DES DONNEES HOTES COMPRIMEES
Patent Applicant/Assignee:
THE REGENTS OF THE UNIVERSITY OF CALIFORNIA,
SANDFORD Maxwell T II,
HANDEl Theodore G,
BRADLEY Jonathan N,
Inventor(s):
SANDFORD Maxwell T II,
HANDEl Theodore G,
BRADLEY Jonathan N,
Patent and Priority Information (Country, Number, Date):
Patent: WO 9636935 A1 19961121
Application: WO 96US7207 19960517 (PCT/WO US9607207)
Priority Application: US 95442592 19950517
Designated States: AL AM AT AU AZ BB BG BR BY CA CH CN CZ DE DK EE ES FI GB GE HU IS JP KE KG KP KR KZ LK LR LS LT LU LV MD MG MK MN MW MX NO NZ PL PT RO RU SD SE SG SI SK TJ TM TR TT UA UG US UZ VN KE LS MW SD SZ UG AM AZ BY KG KZ MD RU TJ TM AT BE CH DE DK ES FI FR GB GR IE IT LU MC NL PT SE BF BJ CF CG CI CM GA GN ML MR NE SN TD TG
Publication Language: English

Fulltext Word Count: 5137

Main International Patent Class: **G06K-009/00**
Fulltext Availability:
Detailed Description

Detailed Description
... adopted by the Federal Bureau of Investigation for the electronic interchange of digital fingerprint information.

The JPEG algorithm is based on the Discrete Cosine Transform (**DCT**) representation of the host data. The WSQ method is based on a representation of the host data in terms of **wavelet** functions. In both methods, the host data representation exists in an intermediate stage as a sequence of integer values referred to as 'indices.' At this...embedding process ignores completely the contribution the index values make to the compression representatio n. In JPEG compression, the values represent the coefficients in a **discrete cosine transform** performed over pixels in a square block of the image data. Usually, 8x8 pixel blocks are used, but the details of the transform and the tiling of the image data are irrelevant for embedding. In WSQ compression, the indices are determined by quantizing the discrete **wavelet** transform coefficients which are calculated by repeated applications of a multirate filter bank. 'Again, details of the **wavelet** calculations and the sampling size are ignored in the selection and use of 5 the embedding pairs.

Depending on the details of the selection algorithm...
?

File 9:Business & Industry(R) Jul/1994-2004/Mar 31
(c) 2004 The Gale Group
File 15:ABI/Inform(R) 1971-2004/Mar 31
(c) 2004 ProQuest Info&Learning
File 16:Gale Group PROMT(R) 1990-2004/Apr 01
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File 20:Dialog Global Reporter 1997-2004/Apr 01
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File 75:TGG Management Contents(R) 86-2004/Mar W3
(c) 2004 The Gale Group
File 80:TGG Aerospace/Def.Mkts(R) 1986-2004/Apr 01
(c) 2004 The Gale Group
File 88:Gale Group Business A.R.T.S. 1976-2004/Mar 31
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File 98:General Sci Abs/Full-Text 1984-2004/Feb
(c) 2004 The HW Wilson Co.
File 112:UBM Industry News 1998-2004/Jan 27
(c) 2004 United Business Media
File 141:Readers Guide 1983-2004/Feb
(c) 2004 The HW Wilson Co
File 148:Gale Group Trade & Industry DB 1976-2004/Mar 31
(c)2004 The Gale Group
File 160:Gale Group PROMT(R) 1972-1989
(c) 1999 The Gale Group
File 275:Gale Group Computer DB(TM) 1983-2004/Apr 01
(c) 2004 The Gale Group
File 264:DIALOG Defense Newsletters 1989-2004/Mar 31
(c) 2004 The Dialog Corp.
File 484:Periodical Abs Plustext 1986-2004/Mar W3
(c) 2004 ProQuest
File 553:Wilson Bus. Abs. FullText 1982-2004/Feb
(c) 2004 The HW Wilson Co
File 570:Gale Group MARS(R) 1984-2004/Apr 01
(c) 2004 The Gale Group
File 608:KR/T Bus.News. 1992-2004/Apr 01
(c)2004 Knight Ridder/Tribune Bus News
File 620:EIU:Viewswire 2004/Mar 31
(c) 2004 Economist Intelligence Unit
File 613:PR Newswire 1999-2004/Apr 01
(c) 2004 PR Newswire Association Inc
File 621:Gale Group New Prod.Annou.(R) 1985-2004/Apr 01
(c) 2004 The Gale Group
File 623:Business Week 1985-2004/Mar 31
(c) 2004 The McGraw-Hill Companies Inc
File 624:McGraw-Hill Publications 1985-2004/Mar 31
(c) 2004 McGraw-Hill Co. Inc
File 634:San Jose Mercury Jun 1985-2004/Mar 31
(c) 2004 San Jose Mercury News
File 635:Business Dateline(R) 1985-2004/Mar 31
(c) 2004 ProQuest Info&Learning
File 636:Gale Group Newsletter DB(TM) 1987-2004/Apr 01
(c) 2004 The Gale Group
File 647:CMP Computer Fulltext 1988-2004/Mar W3
(c) 2004 CMP Media, LLC
File 674:Computer News Fulltext 1989-2004/Mar W3
(c) 2004 IDG Communications
File 810:Business Wire 1986-1999/Feb 28
(c) 1999 Business Wire
File 813:PR Newswire 1987-1999/Apr 30

Set	Items	Description
S1	926565	(IMAGE? ? OR PICTURE? ? OR PHOTO? ? OR GRAPHIC? OR PHOTOGRAPH?)(5N)(DIGITAL? OR BINARY? OR OPTICAL? OR ELECTRONIC? OR COMPUTER?) OR JPG OR JPGS OR JPEGS OR JPEG OR MPEG OR MPEGS OR GIF OR GIFS OR TIFF OR BMP
S2	12286	WAVELET? ? OR WAVE()LET? ? OR HAAR
S3	10892	DCT OR DISCRETE()COSINE()TRANSFORM
S4	3805671	DIGITAL OR DIGITI? OR BINARY
S5	93890	WATERMARK? OR WATER()MARK? OR COPYRIGHT(W)PROTECT? OR DIGITAL(3N)(FINGERPRINT? OR FINGER(W)PRINT?) OR (ID OR IDS OR IDENTIFIER? ?)(5N)S4 OR STEGANOGRAPH? OR STEGANO()GRAPH?
S6	2	S1(S)S2(S)S3(S)S5
S7	1	RD S6 (unique items)
S8	1	S7 NOT PY>1998
S9	4	S2(S)S3(S)S5
S10	794	S2(10N)S4
S11	18	S10(S)S3
S12	22	S9 OR S11
S13	16	RD S12 (unique items)
S14	8	S13 NOT PY>1998
S15	8099	AU=(CHOI, J? OR CHOI J? OR KIM, J? OR KIM J? OR CHO, J? OR CHO J? OR LEE, H? OR LEE H?) OR CO=MARKANY
S16	21	S15 AND (S2 OR S3)
S17	4	S16 AND S1
S18	4	RD S17 (unique items)
S19	4	S18 NOT (S8 OR S14)
S20	1	S19 NOT PY>1998

8/3,K/1 (Item 1 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

01663108 03-14098
Protecting digital media content
Memon, Nasir; Wong, Ping Wah
Communications of the ACM v41n7 PP: 34-43 Jul 1998
ISSN: 0001-0782 JRNL CODE: ACM
WORD COUNT: 4301

...TEXT: larger number of bits without incurring noticeable visual artifacts. Such techniques can be employed with common image transforms, such as discrete cosine transforms (DCTs), the **wavelet** transform, and Fourier transforms. A transform-domainbased technique, reported in [12], is tailored to **JPEG** lossy image compression, facilitating insertion of a **watermark** while an image is being compressed. The **watermark** is embedded in the **DCT** coefficients obtained by transforming nonoverlapping 8 X 8 image blocks. The specific blocks are pseudorandomly selected, and specific coefficients from a limited set are then...
?

14/3,K/1 (Item 1 from file: 15)
DIALOG(R)File 15:ABI/Inform(R)

01663108 03-14098
Protecting digital media content
Memon, Nasir; Wong, Ping Wah
Communications of the ACM v41n7 PP: 34-43 Jul 1998
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...TEXT: larger number of bits without incurring noticeable visual artifacts. Such techniques can be employed with common image transforms, such as discrete cosine transforms (DCTs), the **wavelet** transform, and Fourier transforms. A transform-domainbased technique, reported in [12], is tailored to JPEG lossy image compression, facilitating insertion of a **watermark** while an image is being compressed. The **watermark** is embedded in the **DCT** coefficients obtained by transforming nonoverlapping 8 X 8 image blocks. The specific blocks are pseudorandomly selected, and specific coefficients from a limited set are then...

14/3,K/2 (Item 1 from file: 16)
DIALOG(R)File 16:Gale Group PROMT(R)

04964376 Supplier Number: 47294311 (USE FORMAT 7 FOR FULLTEXT)
Codecs head for collision
Doherty, Richard
Electronic Engineering Times, p47
April 14, 1997
Language: English Record Type: Fulltext
Document Type: Magazine/Journal; Trade
Word Count: 392

(USE FORMAT 7 FOR FULLTEXT)
TEXT:
...watching dozens of hours of digital TV each week-in the sense that most "analog" TV content aired has been squeezed through one or more **digital** codecs. Now, with more **DCT** , **wavelet** and even-fractal based non-linear editing systems influencing the food chain of television video production, what finally gets broadcast is anyone's guess.

14/3,K/3 (Item 1 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

09437699 SUPPLIER NUMBER: 19288369 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Compression schemes enhance video. (wavelets and fractals)(Emerging markets special report) (Technology Information)
Bindra, Ashok
Electronic Engineering Times, n947, p86(2)
March 31, 1997
ISSN: 0192-1541 LANGUAGE: English RECORD TYPE: Fulltext; Abstract
WORD COUNT: 1225 LINE COUNT: 00108

... tolerance are key advantages of wavelet mathematics, according to Roger Smith, marketing manager for digital video ICs at ADI's Computer Products Division. Compared to **DCT** - (**discrete cosine transform**)

based JPEG and MPEG formats, Smith added, wavelets provide compression ratios as high as 350 to 1, as well as better quality. In fact, he anticipates that **wavelets** will open a new world of **digital** video and that a standard image format based on **wavelet** techniques will evolve in the next few years.

Meanwhile, several developers are adopting wavelet technology using the ADV601 chip. Among them are Quadrant International (Malvern...

14/3,K/4 (Item 2 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

08976902 SUPPLIER NUMBER: 18660155 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Do-it-yourself wavelet analysis. (includes related article)
McGoldrick, Paul
Electronic Design, v44, n17, p153(2)
August 19, 1996
ISSN: 0013-4872 LANGUAGE: English RECORD TYPE: Fulltext; Abstract
WORD COUNT: 1202 LINE COUNT: 00100

... 1823 by Joseph Fourier in Paris (it therefore seems appropriate that the Wavelet Toolbox was created by a French team in Paris). Conventional techniques of **discrete cosine transform** (**DCT**), discrete sine transform (DST) and Hartley transform (HT) are all real-world versions of Fourier. The transform itself doesn't remove any information, it just...

14/3,K/5 (Item 3 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

08976901 SUPPLIER NUMBER: 18660154 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Video-compression chip is the first to use wavelets.
McGoldrick, Paul
Electronic Design, v44, n17, p150(2)
August 19, 1996
ISSN: 0013-4872 LANGUAGE: English RECORD TYPE: Fulltext; Abstract
WORD COUNT: 1241 LINE COUNT: 00099

... O port (ILLUSTRATION FOR FIGURE 2 OMITTED).

The wavelet kernel gathers statistics on the video on a field basis (unlike the block structure in a **DCT** process). On the basis of the pre-determined 7,9 coefficients (chosen from research on moving video compression), it calculates forward and backward biorthoganal wavelet...

14/3,K/6 (Item 4 from file: 148)
DIALOG(R)File 148:Gale Group Trade & Industry DB

05583439 SUPPLIER NUMBER: 11594980 (USE FORMAT 7 OR 9 FOR FULL TEXT)
Squeezing the image. (image compression)
Causey, Rob
Electronics Weekly, n1570, p18(1)
Oct 16, 1991
ISSN: 0013-5224 LANGUAGE: ENGLISH RECORD TYPE: FULLTEXT; ABSTRACT
WORD COUNT: 1473 LINE COUNT: 00114

... new transform uses impulse-like wavelets. The wavelet transform provides a more accurate coding because the wavelets last a finite length of time, whereas the **DCT** 's cosines theoretically have to go on for ever, which is obviously impossible.

The set of wavelets which describe a particular data stream are stored...

14/3,K/7 (Item 1 from file: 647)
DIALOG(R)File 647:CMP Computer Fulltext

01122916 CMP ACCESSION NUMBER: EET19970414S0058
Codecs head for collision (Mediastream)
Richard Doherty
ELECTRONIC ENGINEERING TIMES, 1997, n 949, PG47
PUBLICATION DATE: 970414
JOURNAL CODE: EET LANGUAGE: English
RECORD TYPE: Fulltext
SECTION HEADING: Design
WORD COUNT: 393

TEXT:
... watching dozens of hours of digital TV each week-in the sense that most "analog" TV content aired has been squeezed through one or more **digital** codecs. Now, with more **DCT** , **wavelet** and even-fractal based non-linear editing systems influencing the food chain of television video production, what finally gets broadcast is anyone's guess.

14/3,K/8 (Item 2 from file: 647)
DIALOG(R)File 647:CMP Computer Fulltext

01122066 CMP ACCESSION NUMBER: EET19970331S0071
Compression Schemes Enhance Video
Ashok Bindra
ELECTRONIC ENGINEERING TIMES, 1997, n 947, PG86
PUBLICATION DATE: 970331
JOURNAL CODE: EET LANGUAGE: English
RECORD TYPE: Fulltext
SECTION HEADING: Emerging Markets - Communications
WORD COUNT: 1130

... variety of applications, and have been targeted at desktop publishing , presentation graphics and image transmission.

Symmetry, scalability, precision and error tolerance are key advantages of **wavelet** mathematics, according to Roger Smith, marketing manager for **digital** video ICs at ADI's Computer Products Division. Compared to **DCT** - (**discrete cosine transform**) based JPEG and MPEG formats, Smith added, wavelets provide compression ratios as high as 350 to 1, as well as better quality. In fact, he anticipates that **wavelets** will open a new world of **digital** video and that a standard image format based on **wavelet** techniques will evolve in the next few years.

Meanwhile, several developers are adopting wavelet technology using the ADV601 chip. Among them are Quadrant International (Malvern...
?

20/3,K/1 (Item 1 from file: 88)
DIALOG(R)File 88:Gale Group Business A.R.T.S.

04692012 SUPPLIER NUMBER: 20438881
DCT **coefficients recovery-based error concealment technique and its application to the** MPEG **-2 bit stream error.**
Park, Jong Wook; **Kim, Jong Won** ; Lee, Sang Uk
IEEE Transactions on Circuits and Systems for Video Technology, v7, n6, p845(10)
Dec, 1997
ISSN: 1051-8215 LANGUAGE: English RECORD TYPE: Abstract

DCT **coefficients recovery-based error concealment technique and its application to the** MPEG **-2 bit stream** error.
... **Kim, Jong Won**

AUTHOR ABSTRACT: This paper presents a novel error concealment technique based on the **discrete cosine transform** (**DCT**) coefficients recovery and its application to the **MPEG** -2 bit stream error. Assuming a smoothness constraint on image intensity, an object function which describes the intersample variations at the boundaries of the lost block and the adjacent blocks is defined, and the corrupted **DCT** coefficients are recovered by solving a linear equation. Our approach can be regarded as a special case of Wang et al.'s (1). However, we...
...a multistage error detection algorithm. Thus, the proposed EC system can be applied to more realistic environments, such as concealment of random bit error in **MPEG** -2 bit stream. Computer simulation results show that the quality of a recovered image is significantly improved even at a bit error rate as high as (10.sup.-5). Index Terms - **DCT** coefficients recovery, error cancealment, error detection.
?